When Stability Turns Into Gain:

Changes in Evaluations of Developmental Outcomes Across Adulthood

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Abstract

Previous research has demonstrated that people expect more developmental losses than gains with increasing age and that younger adults pursue different developmental goals compared to older adults. The presented thesis integrates research on age differences in developmental expectations (i.e., *how* people view development) and goals (i.e., *which* goals people pursue and *how* people pursue their goals) by presenting the first evidence for changes in evaluations of developmental outcomes (gains, stability, loss) across adulthood.

The thesis consists of four parts. In the first part of this thesis, two studies (Study 1: $N = 234$, age range: 18 – 83 years; Study 2: $N = 166$, age range: 20 – 85 years) replicated the finding that loss expectations increase across the lifespan. Using newly developed assessment methods of perceived multidimensionality of developmental conceptions in different life domains (social relations, subjective well-being, cognition and physical functioning) and life stages (young, middle-aged, older), the studies established that across age groups the least losses were expected for subjective well-being. Additionally, the findings demonstrated the differential role of conceptualizing development of subjective well-being for perceived controllability and actual subjective well-being. Moreover, the studies presented the fist evidence that perceived multidimensionality decreases across adulthood.

In two studies in Part II, it was suggested that the developmental conceptions investigated in Part I could serve as comparison standards against which developmental outcomes are compared. Using self-report and quasi-experimental designs, Study 1 ($N = 119$, age range: 16 – 74 years) and Study 2 ($N = 182$, age range: 18 – 86 years) revealed that older adults evaluate developmental loss more negatively than younger adults. Moreover, older adults evaluated stability less negative and more positive than younger adults.

In Part III, it was theoretically argued that changes in the pursuit of developmental outcomes such as stability and change explain age differences in representations of goal pursuit in terms of means or outcomes. A self-report study ($N = 123$, age range: 18 – 82

years) in Part IV provided the first evidence that the pursuit of change is associated with a representation of goals in terms of outcomes. By contrast, the pursuit of maintenance incorporated a representation of goals in terms of means.

Finally, the results are discussed with regard to their implications for successful developmental regulation across the lifespan.

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Introduction

There is no such thing as a solely good or a completely bad outcome; the evaluation of things depends all too much on the context and the perspective of the beholder. Taking such a constructivistic account (e.g., Labouvie-Vief, 1981), this thesis proposes that the evaluation of developmental outcomes changes as a function of age. Addressing possible underlying mechanisms, it suggests that two factors contribute to the change. Firstly, changes in developmental comparison standards should affect evaluations. Secondly, associated resource expenditure with developmental outcomes as age increases might be an additional central contributor to changes in developmental evaluations. Investigating the possible consequences of evaluations, the thesis is used to argue that developmental evaluations are associated with age-specific goals, which in turn determine goal-specific information processing. More concretely, adoption of age-specific goals is proposed to explain age differences in goal representation in terms of means or outcomes. Finally, the thesis situates all findings regarding antecedents and consequences of changing evaluations within a social-cognitive as well as a lifespan-developmental rationale.

A fundamental tenet of lifespan psychology is the changing ratio of gains to losses with increasing age. This is not only an objective finding (Baltes & Smith, 2003) but is also reflected in individual views on aging (Heckhausen, Dixon, & Baltes, 1989). Whereas younger adulthood is predominantly associated with gains, older adulthood is perceived as mainly entailing losses.

Part I of this dissertation addresses this perceived change in developmental gains and losses as the basic antecedent of changes in the evaluation of developmental outcomes. In order to evaluate developmental outcomes, people have to compare developmental options against comparison standards (Mussweiler, 2003). Perceptions of future growth or decline should function as standards against which gains, stability, or loss as possible developmental outcomes are compared.

In addition to previous investigations on gain and loss representations that mainly used a personality-description approach (e.g., Grühn, Gilet, & Labouvie-Vief, 2011), the two studies presented in Part I incorporated new methods for assessing conceptualizations of gains and losses straightforwardly and mutidimensionally. According to lifespan propositions (Baltes, 1987) and in line with previous findings, adults were expected to await gains, whereas older adults were hypothesized to forecast losses. Further, subjective developmental conceptions were expected to differ between life domains (social relations, subjective well-being, cognition, and physical functioning) as well as life stages (young, middle-aged, and older adulthood). In accordance with objective reseach findings, it was hypothesized that gain and loss conceptualizations would differ with regard to the perceived trajectories between domains; for example, it was expected that more decline is forcasted for cognition than for well-being. Moreover, it was expected that multidimensionality of subjective perceptions is a function of age. More concretely, it was assumed that an increase in life experience likely leads to the experience that life domains are interrelated. That is, the experience that, for example, developmental changes in cognitive functioning are likely to impact functioning in life domains such as social relations and subjective well-being should emerge across adulthood. Therefore, older adults were hypothesized to perceive developmental trajectories in life domains to be more similar compared to middle-aged and younger adults. Finally, and pointing to the functionality of developmental expectations, personal developmental conceptualizations were used as predictors of domain-specific developmental controllability and subjective well-being.

Building on Part I, Part II suggested that older adults compare developmental outcomes against loss trajectories and therefore evaluate developmental outcomes more positively compared to younger adults. In order to account for potential domain differences found in Part I, we assessed the developmental evaluations with regard to the domains we considered already in Part I. In addition to the comparison account, it was assumed that the

resource-expenditure that is associated with developmental outcomes could additionally contribute to the change in evaluations across the lifespan. More concretely, as older adults perceive greater effort with activities, such as cognitive engagement (Hess & Ennis, 2011), it was proposed that the attainment of developmental outcomes would be metacognitivley associated with higher resource expenditure in older adults in comparison to younger adults. According to the assumption that people evaluate activities more positively as personal costs increase (Labroo & Kim, 2009), older adults should evaluate developmental outcomes more positively compared to younger adults. As gains might be positive and losses might be negative for everyone, age differences in evaluations were hypothesized only for developmental stability.

Part III adds assumptions to the account that by setting and pursuing specific goals, individuals create and shape their own lifespan (Freund, 2003, 2007). Goals consist of outcomes that people want to attain or to avoid (Emmons, 1996). Valuing developmental outcomes, such as change or stability, might therefore determine which developmental goals people set. In the chapter presented in Part III of this thesis, the idea was proposed that stability and change goal pursuit might inspire specific goal-related information processes. Concretely, it was suggested that the characteristics of change and stability goals affect goal-related information processing in terms of means or outcomes. We argued that stability goals lead to information procesing in a more concrete mindset and are therefore more likely associated with a representation of goals in terms of means of goal pursuit. By contrast, change goals should result in a more abstract representation and more likely in a representation in terms of goal outcomes. Using self-report, the study in Part IV presented the first evidence in support of these assumptions.

Finally, in the overall discussion, all findings are situated in a social-cognitive context with regard to aging. Additionally, the functionality of the changes in evaluation for successful developmental regulation is addressed.

Part I:

Decrease of Subjective Multidimensionality Across Adulthood

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Abstract

Two studies demonstrated age differences in conceptions of development in different life domains. Study 1 (N = 234, 18 – 83 years) suggested that older adults anticipate stronger decline in four functional life domains (subjective well-being, social relations, cognition, physical functioning) than younger and middle-aged adults. All age groups forecasted least decline in subjective well-being. Study 2 (N = 166, 20 – 85 years) showed that older adults perceive development across domains more as a general trajectory than younger and middle-aged adults. Results of both studies confirmed lifespan notions of multidirectionality (gain and loss expectations) but also show age differences in multidimensionality of conceptions. Moreover, results provided evidence for the function of conceptions for perceived controllability and actual subjective well-being.

Keywords: Subjective developmental conceptualizations; developmental trajectories; aging; gains; losses

Part I: Decrease of Subjective Multidimensionality Across Adulthood

Expectations about one's future life are crucial for a variety of psychological outcomes, such as the perceptions of others, setting of goals, behavior, subjective well-being, and as a guideline for evaluating one's current state (e.g., Brandtstädter, 1989; Freund, 2007; Heckhausen, 1999). Expectations regarding future developmental growth and decline are strongly related to chronological age. There is high social consensus that growth is more prevalent for younger ages and that decline becomes increasingly likely with advancing age (Heckhausen, Dixon, & Baltes, 1989). However, one of the central propositions of lifespan psychology (Baltes, 1987) states that development is multidirectional (i.e., entails gains as well as losses). Moreover, lifespan psychology holds that development is multidimensional, (i.e., differs by functional domain, for example increase and later stability in crystallized intelligence across adulthood, decrease in fluid intelligence; Baltes, Staudinger, & Lindenberger, 2006). Are these propositions also reflected in subjective conceptualizations of adult developmental trajectories? Are subjective conceptualizations of developmental trajectories functional with regard to perceived controllability over developmental changes and current subjective well-being? In the presented research, we approach these questions using a newly developed multidimensional assessment of subjective developmental conceptions.

Subjective Developmental Conceptions Across Adulthood

Subjective developmental conceptions reflect socially shared views of aging trajectories as well as personal experiences with own or other's development (Neugarten, Moore, & Lowe, 1965). These views on development are, to some degree, standards of comparison or guidelines for one's own development (Freund, 2007) and become part of the individual self-concept (Diehl & Wahl, 2011; Freund & Smith, 1999; Kornadt & Rothermund, 2011a; Levy, Zonderman, Slade, & Ferucci, 2009; Rothermund &

Brandtstädter, 2003). In this way, conceptions of development channel the perception of developmental opportunities and constraints. By boosting (or undermining) perceptions of controllability as well as by contributing to the setting of personal goals, conceptions set limitations to and provide potential for *actual* growth and decline (Brandtstädter, 1990; Freund, 2007; Heckhausen, 1999). In fact, research by Levy et al. (2009) has provided empirical evidence that subjective conceptions of age affect a wide range of physiological and psychological outcomes (e.g., for a recent study with a large sample of older adults see also Moser, Spagnoli, & Santos-Eggimann, 2011; Wurm, Tesch-Römer, & Tomasik, 2007).

Thus far, research on developmental conceptions regarding the expectations of gains and losses has mostly focused on the evaluation of personality characteristics across the lifespan (e.g., Fleeson & Heckhausen, 1997). For instance, a study by Heckhausen et al. (1989) found high social consensus regarding expectations of an age-related decrease in developmental gains and an increase in developmental losses. Heckhausen et al. used ratings of personal characteristics, such as skeptical or forgiving, in regard to the degree to which these characteristics are prominent across the lifespan, the desirability of these characteristics, as well as their onset and ending. Again using ratings of personality attributes, Heckhausen and Krueger (1993) compared the difference in the evaluation of oneself and for most other people across adulthood. They found the expectations of own versus others' development to be similar for younger age groups. However, older adults tended to judge other older adults' development less favorably than their own. Heckhausen and Krueger interpreted this finding as reflecting self-enhancement, which they argued became more important in old age when negative expectations threaten self-esteem and perceived control. Similarly, Heckhausen and Brim (1997) suggested that the positive discrepancy between evaluations of one's own compared to most others' development serves as a means for self-protection in older adults.

Recently, Grühn, Gilet, Studer, and Labouvie-Vief (2011) argued for a more domain-differential view in the investigation of change ascribed to personal characteristics across the lifespan (see also Gluth, Ebner, & Schmiedek, 2010; Kornadt & Rothermund, 2011b). Grühn et al. distinguished between the cognitive and physical domain and showed that, although negative profiles are present across the life span, negative *cognitive* characteristics are ascribed more often to young adults and negative *physical* characteristics are ascribed more often to old adults. The most positive personality profile was ascribed to 60-69 year olds.

Note, that starting with the study by Heckhausen et al. (1989), with the very few exceptions noted above, the vast majority of subsequent studies have used the approach of analyzing ratings of personality attributes. Although this approach provides valuable insights into subjective conceptualizations of development, it does not allow assessing *functional* trajectories in different life domains but instead demonstrates the overall desirability of attributes characterizing members of different age groups. Moreover, interpreting the onsets and endings of possessing certain characteristics as gains or losses, is not always straightforward. For instance, the onset of being melancholic or complaining at the age of 55 (late middle adulthood), does not necessarily constitute a *loss*, even though these attributes were rated as rather undesirable in the Heckhausen et al. study (1989, Table 1). A loss implies that a person no longer possesses something (e.g., a desirable attribute, a certain functional level) they previously did. Thus, when interested in conceptions of functional gains and losses across adulthood, a more direct and comprehensive assessment seems more adequate.

In the current research, we therefore included a more straightforward measure of subjective conceptualizations of gains, loss, and stability across four life domains and for the three life stages of young, middle, and older adulthood. The inclusion of perceptions of development across different life domains (subjective well-being, social relations, cognition, and physical functioning) is in particular important as it allows investigating perceived

multidimensionality of development. In line with both, age-related stereotypes (e.g., Hummert, Garstka, Shaner, & Strahm, 1994) and functional development (e.g., Baltes & Smith, 2003), expectations of loss in older adulthood should be more prominent in the domains of physical and cognitive functioning. In contrast, research shows that the quality of social relations and the level of subjective well-being remain fairly stable into old age (e.g., Carstensen, Isaacowitz, & Charles, 1999; Kunzmann, 2008). If subjective conceptions reflect the developmental trajectories derived from research, we should find stability conceptions in these domains.

Additionally, we were also interested in contrasting different life stages (young, middle, old adulthood) that reflect, for some, future expectations and for other conceptions of the past. For instance, middle adulthood lies in the future of young adults but in the past of older adults. Do expectations of the future converge with constructions of the past?

Functionality of Developmental Conceptions

Anticipated Decline and Perceived Controllability

Advertisements of cosmetics, gyms, or "brain jogging" programs suggest that people can change the course of aging by investing resources into these functional domains. Perceiving oneself as able to change developmental trajectories in a desired way might have an impact on the effect of expected age-related changes on subjective well-being. For instance, Brandtstädter (1989) argued that perceived controllability over developmental changes plays a major role for maintaining optimism about one's future life when facing losses. Moreover, perceived controllability of developmental trajectories might be one of the central factors determining how people react to age-related changes behaviorally, cognitively, and emotionally. When losses or decline are perceived as controllable, people are more likely to engage in behaviors that are aimed at counteracting losses. In contrast, when losses or decline are perceived as uncontrollable, lowering one's goals and expectations can bolster

subjective well-being (Heckhausen, Wrosch & Schulz, 2010). As of yet, however, the empirical literature on the relationship between expected change and perceived controllability is surprisingly scarce.

Ideal and Age Group vs. Expected Developmental Trajectories and Their Impact on Subjective Well-Being

Negative aging attitudes seem to be related to lower subjective well-being (Mock & Eibach, in press), and this should be particularly true when expecting worse developmental outcomes for oneself when compared to an ideal developmental trajectory. Interestingly, the discrepancy between actual and ideal development seems to decrease with age (Ryff, 1991; Staudinger, Bluck, & Herzberg, 2003). Self-ideal similarities as well as favorable comparisons of oneself to most other people are both hypothesized to contribute to subjective well-being in older ages (Heckhausen & Krueger, 1993). The association between these comparisons and subjective well-being, however, has not yet been investigated empirically. We expect that the closer expectations for self and ideal development (self-ideal) are, the higher should be subjective well-being. Contrasting one's own developmental trajectories away from negative age-related expectations for other people (self-age group) should positively contribute to subjective well-being.

Perceived Developmental Differences Between Functional Domains

There is evidence that older adults are more sensitive to variability and dynamics in their developmental trajectories across the lifespan, especially in the domain of subjective well-being (Röcke & Lachmann, 2008; Ryff, 1991). Older adults also perceive the onset as well as ending period of change in a more differentiated and elaborated manner than younger and middle-aged adults (Heckhausen, 1990). On the basis of these findings, one could hypothesize that older adults differentiate more than younger ones between development in different functional domains. However, one could also argue for the opposite hypothesis that

older adults are more likely to see the interconnection of different domains and conceptualize developmental trajectories as less multidimensional. This might be the case because, in contrast to younger age groups, older adults might have either experienced themselves, or observed in others, that different domains are highly interconnected. For instance, to some degree good physical and cognitive functioning facilitate social relations and contribute to subjective well-being (Kunzmann, 2008). Higher levels of cognitive and physical functioning facilitate participation in daily activities such as outdoor hobbies or meeting other people that contribute to subjective well-being. As the perception of domain-interrelatedness might be a function of life experience, multidimensionality in subjective conceptions of developmental trajectories might *decrease* with increasing age.

The Current Studies

The presented research assessed personal views of developmental gains and losses in different life domains. In Study 1, we expected to replicate that younger adults expect predominantly gains, whereas older adults should expect losses. Still, we expected domain differences across age groups with regard to gain and loss expectations. We further expected that positive views on development are associated with an increase of perceptions of controllability. In Study 2, we additionally contrasted the personal conceptions against the perceived age groups' and ideal developmental trajectories to account for general stereotypes of aging and wishes regarding personal development. We then aimed to test whether personal, perceived age group's, and ideal trajectories are conceptualized more or less domain differentially with increasing age. Finally, conceptions favoring one's own compared to others' developmental trajectories were expected to predict current life satisfaction as well as subjective health.

Study 1

Study 1 was an online study, asking participants to assess their level of functioning in four functional domains (subjective well-being, cognition, social relations, physical functioning) on a scale ranging from 0% to 100% for *now* and *in 10 years* to investigate the anticipated growth and decline. To assess the perceived controllability of developmental trajectories, we asked participant to indicate the developmental trajectories *with* and *without* the investment of resources. The difference between the expected developmental trajectory without and with resource investment can be conceptualized as perceived controllability.

Method

Procedure

Participants were recruited via postings on various webpages (e.g., seniorweb.ch, marktplatz.uzh.ch) in German-speaking countries (Switzerland, Germany, Austria). They logged on to an online questionnaire that started with an informed consent form. After agreeing to participate in the study, participants filled out a brief demographic questionnaire. They then reported their subjective-age conceptions, affective well-being and perceived control. As a way of reimbursing participants, we raffled 50 vouchers worth 15 Euro/20 CHF (approximately 20 USD) for Amazon.de.

Sample

The sample was comprised of $N = 234$ younger ($n = 128$; 74% women, 18-30 years, $M_{age} = 23.47$, $SD = 2.88$), middle-aged ($n = 57$; 81% women, 40-50 years, $M_{age} = 45.18$, $SD = 3.27$) and older adults ($n = 49$; 49% women, 60-83 years, $M_{age} = 67.53$, $SD = 4.9$). Overall, the sample was well educated, with 74% of the younger, 53% of the middle-aged, and 63% of the older adults holding at least a high school diploma.

Measures

Subjective age-conceptions. Participants were asked to imagine what it meant for them personally to function at 100% in a given domain (subjective well-being, cognitive functioning, physical functioning, and social relations). They were asked to write down a keyword that represented 100% functioning within each domain. Participants were then asked to assess their personal level of functioning for each domain on a 0 to 100% scale (1) *now* and (2) *in 10 years* (a) *with* and (b) *without* effort investment. The instruction regarding the developmental trajectory with the additional investment of effort (here for cognitive functioning) read: "Please imagine yourself investing much more effort than you invest at the moment in your cognitive functioning. What would your level of functioning be then?"

In order to compute **expectations of growth and decline**, we subtracted the ratings of functioning *now* from the level of *functioning in 10 years* in each domain. This score represents the degree of growth (positive scores) or decline (negative scores) that people expect in the next 10 years while holding the current level of functioning stable. Next, we subtracted the level of functioning in 10 years *without* further resource investment from the level of functioning *with* more resource investment. This difference score reflects **perceived controllability** over future growth or decline (the higher the score, the more perceived controllability).

General perceived control was assessed using the Control Scales (personal mastery and perceived constraints subscales; Lachman & Frith, 2004) that is comprised of 12 items (e.g., "I have control over the things that happen to me."). Reliability of the composite score was good (α = .89). There were no age differences in perceived control ($F(2, 231) = 1.33$, p = .27)

Results

All of the following analyses of variance were run with gender and education as additional between subject factors to test for possible interactions with age. As none of the effects with gender and education reached significance, all final analyses were run across women and men as well as across educational levels.

Multidimensionality of Developmental Conceptions

A 4 (domain: subjective well-being, cognition, physical functioning, social relations) x 3 (age group: young, middle-aged, older) repeated measures ANOVA with domain as a within and age group as a between participants factor confirmed significant main effects for domain ($F(3, 664) = 9.25$, $p < .001$, $\eta^2 = .11$) and age group ($F(2, 227) = 58.51$, $p < .001$, $\eta^2 = .34$). The interaction was not significant ($F(6, 664) = 1.35$, $p = .23$, $1\text{-}\beta = .52$). Follow-up comparisons using Scheffé test revealed significant differences in expectations of growth and decline between all age groups ($M_{younger} = 8.97$, $SD = 8.64$, $M_{middle\text{-}aged} = 4.76$, $SD = 10.83$, $M_{older} = 7.35$, $SD = 6.95$, *all ps* < .05; see Figure 1).

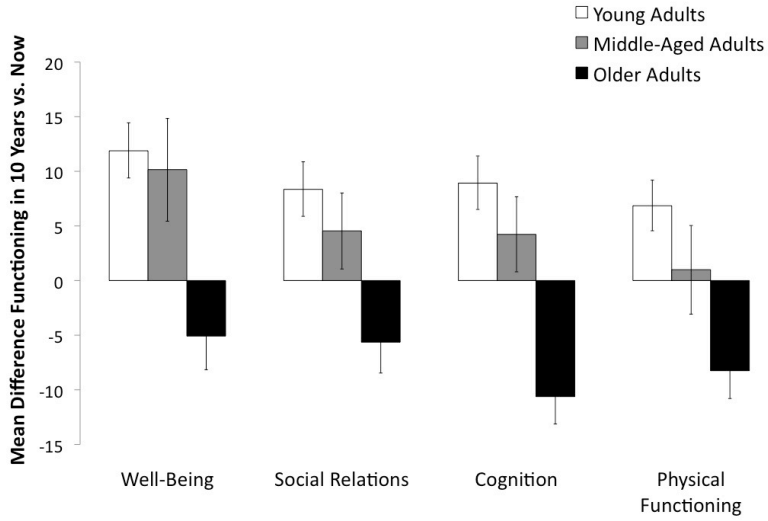

Figure 1. Mean difference values (scale range 0 to 100%) representing the self-rated functioning *now* subtracted from the self-rated functioning *in 10 years*. Error bars represent confidence intervals.

These results replicate previous findings: Older adults expected decline whereas middle-aged and younger adults expected gains over the course of the next 10 years. Older adults expected losses across all functional domains. However, all age groups expected the least decline in the domain of subjective well-being. Paired comparisons of domain effects evinced significant differences between the expectations for subjective well-being and social relations ($t(283) = 3.88$, $p < .001$), subjective well-being and cognitive functioning ($t(288) = 4.5$, $p < .001$), and subjective well-being and physical functioning ($t(286) = 5.67$, $p < 0.01$). All other domain comparisons were not significant (all ts: $-.75 \leq t(281 < df < 284) \leq 1.85$, all $ps \geq .24$).

Anticipated Change and Perceived Controllability

Regression analyses tested if anticipated change in development was associated with perceived domain-specific controllability on development. In the first step, perceived controllability was regressed on age, gender, education, general perceived control, and perceived domain-specific change. As shown in Table 1, age was negatively associated with perceived controllability of development in the domains of social relations and physical functioning. Perceived change in the domain of subjective well-being emerged as the strongest predictor of controllability in all four life domains. We also tested for possible interaction effects of age x perceived domain specific change in predicting perceived controllability. With one exception, none of the interactions reached significance (all ts: $-1.75 \leq t(246) \leq 1.74$, all ps $\geq .08$). The exception concerned the interaction of age x perceived change in cognition in the prediction of perceived controllability of change in cognitive functioning ($\beta = -.18$, $t(246) = -2.10$, $p = .04$).

Table 1 *Regression Analyses Predicting Domain-Specific Perceived Controllability of Change From Perceived Change in Subjective Well-Being, Social Relations, Cognition, and Physical Functioning (Negative Scores Indicate Decline, Positive Scores Indicate Growth)*

	Domains			
	Subj. well-being[1]	Social relations[2]	Cognition[3]	Physical functioning[4]
Predictors	*β*	*β*	*β*	*β*
Age	-.08	-.18*	-.03	-.27**
Gender	-.07	-.08	-.06	-.04
Education	-.05	.10	.08	.08
General control	.02	.17*	-.05	.05
Change in subj. well-being	.18*	.21*	.24**	.17*
Change in social relations	-.06	.01	-.05	.05
Change in cognition	.15*	.06	.10	.10
Change in physical functioning	.07	.02	-.05	-.08

Note. [1] $R^2 = .12$, $SE = 22.92$, $F(8, 246) = 4.22$, $p < .001$.

[2] $R^2 = .14$, $SE = 23.10$, $F(8, 246) = 5.23$, $p < .001$.

[3] $R^2 = .10$, $SE = 17.87$, $F(8, 246) = 3.29$, $p < .001$.

[4] $R^2 = .20$, $SE = 16.50$, $F(8, 246) = 7.60$, $p < .001$.

In sum, results of Study 1 confirm and extend prior research regarding expectations of developmental losses in older adulthood. In line with theory and empirical results concerning emotional development (e.g., Carstensen, Isaacowitz, & Charles, 1999), less negative expectations were found for subjective well-being across all three age groups. Conforming to the literature on control (e.g., Heckhausen, 1999), younger adults perceived more controllability of their development than middle-aged and older adults. Growth conceptions

in subjective well-being were associated with an increase in perceived controllability across all life domains.

Study 2

Building on and extending Study 1, Study 2 included expectations for self, ideal developmental conceptions, and general age-related expectations in four life domains (subjective well-being, social relations, cognition, and physical functioning). Further, Study 2 was used to test for possible implications of conceptions on actual subjective well-being.

Method

Procedure

Participants were recruited from Switzerland, Germany, and Austria by web-postings and through a participant pool of our laboratory. Paper-pencil questionnaires were sent to participants via mail. After providing informed consent, participants filled out a brief demographic questionnaire as well as measures of life satisfaction and subjective health. Then, subjective developmental conceptions were assessed (see below). Participation in this study was reimbursed by entering a lottery for an iPhone 4.

Sample

The sample consisted of $N = 165$ younger ($n = 78$; 77% women, 20-40 years, $M_{age} = 25.23$, $SD = 4.12$), middle-aged ($n = 52$; 58% women, 41-60 years, $M_{age} = 48.15$, $SD = 4.84$) and older adults ($n = 35$; 57% women, 61-85 years, $M_{age} = 69.86$, $SD = 6.25$). One participant was excluded because the drawings of expected developmental trajectories could not be coded. Six participants (3 younger, 1 middle-aged and 2 older participants) were excluded because they returned the questionnaire without providing informed consent; 39.7% of the younger, 56.9% of the middle-aged and 25.7% of the older adults held at least a high-school diploma.

Measures

Subjective developmental conceptions. Using a new way of assessing subjective conceptions of developmental trajectories via graphical representation (for a similar approach see Lang, Görlitz, & Seiwert, 1992), we conducted a small pilot study with six participants (three older, three younger) to ensure the face validity of the study. We tested whether the instructions were understandable and could be followed by adults of different ages. Participants were introduced to a detailed example on how development across time can be visualized using lines (ascending, descending, parallel). All pilot participants were able to follow the instructions and were able to explain the meaning of ascending (growth), flat (stability), and descending lines (loss). More specifically, participants were instructed to draw their subjective age-conceptions in an axis of abscissas using ascending, flat, or descending lines. The abscissa indicated age, ranging from young (18-30 yrs), middle age (45-55 yrs) to older adulthood (65+ yrs). The ordinate signified the subjectively expected level of growth or decline in functioning (ranging from -100% to +100%). The line drawn by participants was to symbolize the subjective developmental trajectory (see Back & Bourque, 1970, for a similar assessment method). This allowed participants to provide expectations of growth (positive slope), decline (negative slope) and stability (flat line). Participants were asked to draw developmental trajectories in the four domains also used in Study 1 (subjective well-being, cognitive functioning, physical functioning, and social relations), using three different perspectives (self, own age group, and ideal). Each of the subjective age-conceptions was drawn into a single axis of abscissas, resulting in a total of 12 trajectories. A detailed description of the study instructions is provided in Appendix A.

The subjective conception of growth and decline was operationalized as the slope in each life stage. Three independent raters rated the degree of the slope on a scale from -3 (*strong decline*) to 0 (*stability*) to +3 (*strong increase*). Interrater reliabilities were

sufficiently high (all intraclass correlations > .78) to treat the mean of the rated slopes as the dependent variable. Figures 2, 3, and 4 depict mean slope values for the 12 trajectories.

Self-age group comparisons. As a measure of self-age group comparisons we subtracted the slope participants drew for their age group from the slope they drew for their own development for each life stage and domain (see Appendix B). Positive values indicate that participants assessed their own development as more favorable than their age group's development, with zero indicating no difference between the conceptions; negative values indicate that participants assessed their age group's development as better when compared to their own.

Self-ideal comparisons. Similarly, as a measure of self-ideal comparisons we subtracted the slope participants indicated as their ideal development from the slope they drew for their own development (see Appendix B). Again, positive values indicate that participants assessed their own development as better than their ideal development; negative values indicate that participants assessed their ideal development as better when compared to their own development.

Actual subjective well-being was operationalized via two facets, namely a single-item measure of life satisfaction ("Overall, how content are you with your life?") and a single-item measure of subjective health ("Overall, how good is your health?"). There were significant age-related differences in life satisfaction but not in subjective health (life satisfaction: $F(2, 165) = 6.87$, $p < .001$, $\eta^2 = .08$; health: $F(2,165) = 2.41$, *n.s.*). Younger ($M = 4.47$, $SD = 1.12$) and middle-aged adults ($M = 4.66$, $SD = 1.22$) were significantly less satisfied with their lives than older adults ($M = 5.29$, $SD = .67$).

Results

Analyses of variance were run to test for systematic interactions of gender and education with age. As no relevant effect reached significance, analyses were run across

gender and educational levels. Repeated-measures ANOVAs tested age group (young, middle-aged, and older) and domain (subjective well-being, cognition, physical functioning, and social relations) differences in personal conceptions, self-age group, and self-ideal comparisons. Finally, multiple regression analyses were used to test whether participants who view themselves more positively than their age group or rate their own development as similar to the ideal development also exhibit higher actual subjective well-being.

A 4 (domain: subjective well-being, cognition, physical functioning, social relations) x 2 (comparison: self-ideal, self-age group) x 3 (evaluated life stage: young, middle-aged, older) x 3 (age group: young, middle-aged, older) repeated measures ANOVA revealed significant main effects for domain ($F(3, 403) = 11.58$, $p < .001$, $\eta^2 = .07$), perspective ($F(1, 141) = 121.03$, $p < .001$, $\eta^2 = .46$), evaluated life stage ($F(2, 274) = 18.50$, $p < .001$, $\eta^2 = .12$), and age group ($F(2, 141) = 6.40$, $p = .002$, $\eta^2 = .08$). The two way interactions of perspective x domain ($F(3, 405) = 10.25$, $p < .001$, $\eta^2 = .07$), domain x age group ($F(6, 402) = 2.45$, $p = .02$, $\eta^2 = .03$), life stage x age group ($F(4, 273) = 7.31$, $p < .001$, $\eta^2 = .09$), and life stage x domain $F(5, 714) = 8.37$, $p < .001$, $\eta^2 = .06$) were significant. The three-way interactions of age group x domain x perspective ($F(6, 613) = 2.24$, $p = .04$, $\eta^2 = .03$) and of domain x life stage x perspective ($F(10, 613) = 18.26$, $p < .001$, $\eta^2 = .04$) were significant, but not the interaction of domain x life stage x age group ($F(12, 613) = 1.46$, *n.s.*, $1\text{-}\beta = .78$). The four way interaction was not significant ($F(10, 613) = 1.4$, *n.s.*, $1\text{-}\beta = .72$). Below, we will report the follow-up comparisons related to the two-way domain x age group as well as the three-way interactions. All paired domain comparisons appear in Table 2. Means and confidence intervals are summarized in Figure 2, 3, and 4 in Appendix B. Means and confidence intervals of the difference scores are depicted in Appendix C.

Table 2 *Pairwise T-Tests of Domain Differences in Developmental Self-Age Group and Self-Ideal Comparisons by Age Group*

	Subj. well-being		Social relations		Cognition	
Comparison	Age group	Ideal	Age group	Ideal	Age group	Ideal
			Young adults[1]			
Subj. well-being						
Social relations	2.78*	-.71				
Cognition	-3.20*	-5.68**	-.99	-6.61**		
Physical functioning	3.43**	4.47**	1.60	5.60**	.054	-2.18*
			Middle-aged adults[2]			
Subj. well-being						
Social relations	2.59*	-.24				
Cognition	-2.99*	-4.04**	-.46	-4.04**		
Physical functioning	3.25*	.66	.77	.422	.26	-3.46**
			Older adults[3]			
Subj. well-being						
Social relations	-.39	-.33				
Cognition	-.79	-1.73	-.87	-1.61		
Physical functioning	1.45	-.177	1.80	.134	.69	-2.32*

Note. *$p < .01$. ** $p < .001$.

[1] *dfs*= 76,77.

[2] *dfs* = 51, 52, 53.

[3] *dfs* = 33, 34.

Multidimensionality in Conceptualizations of Personal Development

Indicating a high level of differentiation regarding the conceptualization of developmental trajectories in different functional domains, all domain-comparisons for

younger and middle-aged adults were significant (paired T-Tests; all *t*s: -3.05 ≥ (52, 76, 77) ≤ 2.43; all *p*s < .001). There is only one exception of this pattern for each of the two age-groups of young and middle-aged adults (young adults hold the same developmental conceptualizations for subjective well-being and social relations: $t(76) = 1.43$, $p = .15$; middle-aged adults' developmental conceptualizations do not differ for social relations and cognition: $t(52) = -.96$, $p = .34$). Older adults' subjective conceptualizations show less domain differentiation, indicating a decrease in multidimensionality. Whereas physical functioning was perceived to take a different developmental trajectory than social relations, subjective well-being, and cognitive functioning, (all *t*s: -2.40 ≥ *t* (34) ≥ 2.44; all *p*s ≤ .02), subjective developmental trajectories did not differ between all other domains (all *t*s: -.73 ≤ $t(34) \leq -.21$; all *p*s ≥ .47).

Multidimensionality in Self-Age Group Comparisons

Indicating multidimensionality in self-age group comparisons, the 4 (domain: subjective well-being, cognition, physical functioning, social relations) x 3 (age group: young, middle-aged, older) repeated measures ANOVA evinced a significant main effect for domain ($F(3, 456) = 8.33$, $p < .001$, $\eta^2 = .05$). There was no main effect of age group ($F(2,160) = 1.19$, $p = .30$, 1- $\beta = .26$) and no age group x domain interaction ($F(6, 456) = .97$, $p = .44$, 1- $\beta = .37$).

Domain differences. Across age groups, the largest self-age group differences were perceived for subjective well-being ($M = .22$, $SD = .83$) with significant difference to all other domains (*t*s: -4.29 ≤ $t(163 \leq df \leq 165) \geq 3.78$, all *p*s < .05). Self-age group comparisons differed for social relations and physical functioning ($t(163) = 2.35$; $p < .05$). All other domain comparison were not significant (*t*s: -1.32 ≤ $t(162 \leq df \leq 164) \leq .44$, all *p*s ≥ .19).

Multidimensionality in Self-Ideal Comparisons

A 4 (domain: subjective well-being, cognition, physical functioning, social relations) x 3 (age group: young, middle-aged, older) repeated measures ANOVA evinced significant main effects for domain ($F(3, 466) = 18.13$, $p < .001$, $\eta^2 = .10$) and age group ($F(2, 159) = 11.30$, $p < .001$, $\eta^2 = .12$), and an age group x domain interaction ($F(6, 466) = 2.78$, $p = .01$, $\eta^2 = .03$).

Age-related differences. Scheffé-Tests revealed that middle-aged and older adults perceived their ideal development across all domains to be more similar to their own development than younger adults ($M_{young} = -.65$, $SD = .52$; $M_{middle\text{-}aged} = -.39$, $SD = .36$; $M_{older} = -.22$, $SD = .41$; both $ps < .05$). There was no significant difference between middle-aged and older adults ($p \geq .24$).

Domain differences. For younger adults, paired T-Tests revealed *no* significant difference between the perceived developmental difference between self and ideal in the domains of subjective well-being ($M = -.40$, $SD = .85$; $t(76) = -.71$, $p \geq .48$) and social relations ($M = -.33$, $SD = .61$). However, all other domains differed significantly from each other (all ts: $4.5 \leq t(76 \leq df \leq 77) \leq -2.18$; all ps $< .001$). Middle-aged adults perceived the self-ideal difference in cognition ($M = -.71$, $SD = .64$) significantly larger than the self-ideal difference in subjective well-being ($M = -.26$, $SD = .58$), social relations ($M = -.26$, $SD = .64$), and physical functioning ($M = -.34$, $SD = .66$; all ts$(50 \leq df \leq 52) \leq -3.46$; all ps $< .001$). The self-ideal differences in the domains of subjective well-being, social relations, and physical functioning did not differ from each other (all ts: $-.24 \leq t(50 \leq df \leq 52) \leq .42$, all ps $> .5$). For older adults, the self-ideal difference in cognitive functioning ($M = .42$, $SD = .67$) was perceived as more pronounced than in the domain of physical functioning ($M = -.15$, $SD = .53$; $t(34) = -2.32$, $p < .05$). The self-ideal differences in the other domains did not differ from each other (all ts: $-1.73 \leq t(33 \leq df \leq 34) \leq .13$; all ps $\geq .09$). The results reveal a decrease in

multidimensionality of self-ideal comparisons across adulthood. Across age groups, the largest differences between self and ideal development were perceived in the domain of cognition.

Self-Age Group Comparisons and Self-Ideal Comparisons as Predictors of Life Satisfaction and Subjective Health

Using multiple regression analyses, we predicted life satisfaction and subjective health with the self-age group comparison and the self-ideal comparison separately for each life stage and for each life domain. Consistent with the literature, chronological age of participants was positively associated with life satisfaction (β = .12, $t(111) = 3.95$, $p < .001$) and with subjective health (β = .09, $t(111) = 2.77$, $p = .007$). Participants who judged the development of the age group as *worse* than their own development in the domain of cognition in the life stage of younger adulthood reported *better* subjective health (β = .13, $t(111) = 2.62$, $p = .01$). Similarly, participants who judged the development of the age group as *worse* than their own development in the domain of social relations in the life stage of middle adulthood reported *better* life satisfaction (β = .09, $t(111) = 2.33$, $p = .02$).

Similarly, favorable self-ideal comparisons in the domain of subjective well-being contributed significantly to subjective health (β = .12, $t(111) = 2.83$, $p < .01$). Self-ideal comparisons and self-age group comparisons in the other life domains were unrelated to life satisfaction (all *t*s: $-1.36 \leq t(111) \leq 1.35$, all *p*s $\geq .05$) and subjective health (all *t*s: $-1.37 \leq t(111) \leq 1.06$, all *p*s $\geq .17$).

Discussion

Do different age groups conceptualize development differentially across domains? How do these conceptions affect perceived controllability and actual subjective well-being? Three important results emerged from the two current studies: Confirming lifespan theoretical assumptions, subjective conceptualizations of development are (a) multidirectional (i.e.,

comprise gains *and* losses), (b) multidimensional (i.e., reflect differences between developmental conceptualizations in functional domains), (c) expected developmental growth in subjective well-being is associated with higher perceived controllability in these domains (even after controlling for general control beliefs).

Limitations. Before discussing the results in more detail, we would like to point to some limitations that constrain the interpretation of the results. First, both studies investigated four functional life domains (subjective well-being, social, cognitive, and physical) and developmental conceptions might be different in other life domains. Additionally, several social cognitive issues have to be considered when interpreting our data. Individuals differ in their representation of time (Cottle, 1976), and time is an age-sensitive construct (Thomae, 1989). That is, predicting development into the next 10 years might represent a rather short future time period for younger adults but an extended future time perspective in older adults (Lang & Carstensen, 2002). In addition, the evaluation of one's past development (e.g., older adults' subjective conception of their developmental trajectory during young or middle adulthood) might depend on the actual time distance, leading to stronger memory biases for the distant compared to the more immediate past (Wilson & Ross, 2001). Moreover, memory processes might differ between age groups. As aging seems to affect memories of emotional content less than other contents (e.g., Carstensen & Turk-Charles, 1994), older adults might remember highly emotionally charged developmental changes more accurately than less subjectively important domains. Note, however, that we were interested in the *subjective* conceptions and not in actual development. In our view, memory biases are a part of the phenomenon.

Another limitation concerns the design. Both studies are based on cross-sectional designs, confounding age with cohort effects (Schaie, 1965). Additionally, the first study was based on an online assessment. This might be somewhat problematic when measures are

assessed that are highly sensitive to distraction (e.g., cognitive measures involving speed). In the case of Study 1, however, this was not the case. In general, Internet studies do not seem to differ regarding the reliability of the results and replicate laboratory findings (Birnbaum, 2004; Reips, 2001). However, the findings from Study 2, a paper-and-pencil test, converge with results from Study 1. Another limitation refers to the relatively high level of education in our samples. Higher education has affected developmental expectations. Note, however, that controlling for education did not change the results. Clearly, representative samples are best suited for investigating normative expectations. Unfortunately, the recruitment of representative samples as well as the implementation of longitudinal studies is as difficult as it is desirable. In addition, we were primarily interested in age-related differences in the multidimensionality, multidirectionality, and the functions of subjective developmental conceptions rather than in the description of developmental conceptions in the general population.

Developmental conceptualizations in the domain of subjective well-being. Both studies emphasize the role of the domain of subjective well-being in multidimensionality and the functionality of developmental conceptualizations. First, results of Study 1 showed that, compared to younger adults, older adults conceptualized their future development more negatively. However, there were domain-related differences such that all age groups expected the most positive developmental trajectory for subjective well-being. Adding to these positive expectations regarding the development of subjective well-being, Study 2 showed that all age groups perceive their development as superior to their age group. Moreover, for the domain of subjective well-being, self-age group discrepancies were perceived to increase and self-ideal discrepancies to decrease across adulthood. As elaborated in the introduction, expectations about development have multiple functions for the setting and pursuit of goals and as standards of comparison (e.g., Freund, 2007). As research in the area of social

comparisons demonstrates, downward comparisons mostly help to increase subjective well-being (e.g., Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Heckhausen & Krueger, 1993).

Generally, middle-aged and older adults seem to become more satisfied with their lives, operationalized as a higher similarity between one's own and the ideal development across different life domains. These results support previous research showing that individuals who enter old age adopt more positive views of characteristics associated with older adults (Hummert et al., 1994; Rothbaum, 1983) and perceive a greater fit between ideal and self assessments (Ryff, 1991). The findings are validated by the result that self-ideal discrepancies in subjective well-being contribute to life satisfaction and subjective health. Future research needs to address the possible interplay of conceptions of ideal and the development of one's age-group as standards of comparison for setting future levels of aspirations or for evaluating one's actual level of functioning.

Developmental conceptions in the domain of subjective well-being seem to affect the perception of controllability of one's life. The results indicated that developmental conceptions of subjective well-being are tied closer to perceptions of controllability than developmental conceptions in other domains. More concretely, adults who expected gains in subjective well-being over time, also expected to have more control on their own development in cognitive and physical functioning, social relations, and subjective well-being. Expecting to feel better, then, might boost adults' views or hopes of themselves as producers of their own development. Increasing levels of current subjective well-being might also lead to a general optimistic perception of one's own impact on development.

Growth conceptions. Results from Study 2 suggest that growth conceptions might stimulate positive feelings about one's life and health. Again, the opposite causal direction might also be true: People who feel healthy and content might adopt growth conceptions of

their own future. Note, however, that Wurm, Tomasik, and Tesch-Römer (2010) showed that the effect of subjective developmental conceptions on health is stronger than the effect of health on subjective conceptualizations. Further longitudinal or experimental research is needed to address this question.

The present studies provide strong evidence for multidimensionality in the subjective conceptions of development across age groups. We also found systematic age-differences as older adults seem to differentiate less between functional domains when they compare their own development with that of their ideals. We have hypothesized that older adults conceptualize development less multidimensionally because they might have experienced the actual connectedness of functioning in different life domains (e.g., physical health facilitates getting together with friends and might, thereby, contribute to social relations). An alternative interpretation of this result is based on cognitive representations in older adulthood. Older adults might have a less detailed and hence broader categorization and representation of different functional domains, which might efficient information processing (Luo & Craik, 2009). Note, however, that Hummert et al. (1994) found that older adults hold a more differentiated view of subgroups of older adults than younger adults. This makes the first interpretation (acknowledgment of the interconnectedness of functional domains) more likely.

Thus, the current studies underscore the importance of a differentiated assessment of subjective conceptualizations of development across adulthood and their functionality for perceived controllability and current life satisfaction as well as subjective health. Future longitudinal studies need to address the impact of these conceptualizations as guides for development.

Part II:

The Two Faces of Stability: Age-Related Differences in Evaluating Developmental Stability

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Abstract

Objectives. Two studies examined age-related differences in the interpretation of developmental stability across adulthood.

Method and Results. Study 1 (N = 119) found that, compared to younger (M_{age} = 23.38 years) and middle-aged adults (M_{age} = 38.68 years), older adults (M_{age} = 65.29 years) evaluate developmental stability more positively and prevention of loss less negatively across all life domains under investigation (subjective well-being, social relations, cognition, physical functioning). Study 2 (N = 182, age-range: 18 – 86 years demonstrates that these age differences exist only on an explicit but not on an implicit level of evaluations.

Discussion. We discuss results in relation to motivational orientation and expectations regarding developmental change.

Keywords: Motivational orientation, stability, prevention of loss, gains, losses, adult development

PART II: The Two Faces of Stability: Age-Related Differences in Evaluating Developmental Stability

Imagine you just had a thorough physical exam and the result is that your level of physical fitness has not changed since the last exam five years ago. Do you evaluate the stability of your physical fitness as positive or negative? The answer most likely depends on your expectations regarding the development of your physical fitness. If you expect your fitness to improve, you most likely evaluate stability negatively. In contrast, if you expected your fitness to decline, stability might feel like a gain and constitute a positive developmental trajectory. Given that expectations for developmental trajectories shift from a predominant focus on gains in younger age groups to increasing losses in older adulthood (Heckhausen, Dixon, & Baltes, 1989; Mustafić & Freund, 2011), older adults should be more likely than younger or middle-aged adults to evaluate stability as positive.

Age and Orientation Towards Gains and Losses

One of the basic tenets of lifespan psychology is that the ratio of gains to losses changes from a predominance of gains in younger ages to increasingly more losses in older ages (Baltes, 1987, 1997). Losses in older adulthood have been shown empirically in a variety of life domains such as fluid aspects of cognitive functioning, physical health, and physical functioning (Baltes & Smith, 2003). Moreover, it seems that subjective conceptualizations of developmental trajectories largely reflect gains in younger adulthood and losses in older adulthood (Heckhausen et al., 1989; Kornadt & Rothermund, 2011; Mustafić & Freund, 2011). Moreover, there is high social consensus about the expected changing ratio of developmental gains to losses across the life span (Heckhausen et al., 1989). Importantly in the present context, younger and older adults are *aware* of the developmental changes across adulthood (Diehl & Wahl, 2010).

Why do subjective conceptualizations of developmental trajectories matter? First, there is evidence showing that the subjective conceptions of developmental changes are used to predict and remember one's personal development (Ross, 1989). Second, adults set personal goals in accordance with developmental expectations (Freund, 2007). For instance, Heckhausen (1997) found that older adults report more goals in life-domains associated with losses (e.g., health). Ogilvie, Rose, and Heppen (2001) found a decline in self-rated gain orientation from young to middle and old adulthood and higher orientation towards the maintenance of functioning in old adults. Similarly, Ebner, Freund, and Baltes (2006) demonstrated that younger adults orient their goals primarily towards gains, whereas middle-aged and older adults report an increasing goal orientation towards maintenance and prevention of loss. Ebner et al. also showed that the motivation to prevent losses was even negatively related to subjective well-being in younger adults. In contrast, adopting a maintenance orientation was positively related to measures of subjective well-being in middle-aged and older adults. This pattern of results points to the possibility that developmental expectations might serve as a standard of comparison. For younger adults, having to strive towards the prevention of losses might be negatively evaluated as the predominant expectation for this age group is to achieve gains in various domains of functioning. In older adults, maintenance might be seen as a positive goal as people expect decline and losses in functioning. This is the main hypothesis of the current studies.

Evaluation of Stability as a Developmental Outcome

Mellers (2000) has argued that subjective outcome expectations determine the evaluation of outcomes of choices as gains or losses and, thereby, the emotional reactions to them. We apply the same rationale to the evaluation of developmental outcomes. The effect of subjective expectations might be most evident for the evaluation of developmental stability (rather than of clear-cut gains or losses). This should be the case because stability

leaves more room for subjective interpretations than marked gains or losses. Older adults might evaluate stability against the expected loss trajectory as a comparison standard, which should lead to an evaluation of stability as a gain. In contrast, younger and middle-aged adults might evaluate stability against an expected growth trajectory and hence evaluate stability as a loss. Consequently, older adults should evaluate stability more positively than younger and middle-aged adults. In addition, as maintenance or prevention of loss goal orientation is associated with more positive outcomes for older than for younger adults (Ebner et al., 2006; Freund, 2006), we assume that, with increasing age, the positive evaluation of stability is positively associated with subjective well-being.

Finally, developmental and aging expectations are domain and context specific (Kornadt & Rothermund, 2011; Mustafić & Freund, 2011). In line with this reasoning, we expect the developmental evaluations to differ between four functional life domains. For example, we expect age-related differences in the evaluation of stability especially in domains in which losses are more salient. As older adults expect more losses in the domains of physical and cognitive functioning compared to well-being (Mustafić & Freund, 2011), age-related differences in the evaluation of stability should be strongest for the physical and cognitive domain.

Explicit and Implicit Developmental Evaluations

As has been shown repeatedly for attitudes and evaluations, explicit and implicit judgments do not always converge (for a review see Greenwald & Banaji, 1995). This might also be true for the evaluation of developmental trajectories. Gawronski and Strack (2004) proposed that explicit measures reflect an evaluative reaction that might not only be affected by spontaneous affective responses but also reflect the impact of other information that is cognitively available for the decision at a given moment. In contrast, implicit measures capture immediate reactions that are less subject to influences other than those

activated by the stimulus. Regarding the evaluation of developmental trajectories, we were interested in exploring whether expectations about development (that serve as a standard of comparison for the evaluation of developmental trajectories) might be so deeply ingrained and used so frequently that they affect *implicit* evaluations of developmental trajectories to the same degree as explicit evaluations. Alternatively, evaluations of developmental trajectories might depend on deliberate processes of invoking a certain developmental expectation for one's age group and establishing it as a standard of comparison. According to the latter view, implicit measures of the evaluation of developmental trajectories might not show the same effects as explicit evaluations.

Salience of Resource Expenditure for Evaluations of Developmental Trajectories

A developmental outcome might increase in value as soon as it is associated with the belief that it is difficult to achieve (Labroo & Kim, 2009). As people experience a change in resource availability across adulthood, younger and older adults might be differentially sensitive to resource expenditure (Ebner et al., 2006; Freund, 2006). Given the decrease in resource availability across adulthood, older adults are more likely than younger adults to be aware of how many resources they spend on what (e.g., the importance of selectivity in older adulthood; Marsiske, Lang, Baltes, & Baltes, 1995), and to be highly motivated to maintain their resources and achievements (Freund & Ebner, 2005; Staudinger, Marsiske, & Baltes, 1995). Freund and Riediger (2001) reported that the maintenance of functioning is likely to become particularly important in older adulthood because repairs become more and more costly for older adults (see also Baltes, 1997). Thus, compared to younger adults, older adults are more likely to be aware of the necessity to invest resources into stability, as they expect declines in functioning in various life domains if they do not invest resources (Mustafić & Freund, 2011). As people tend to value achievements more highly when they come at a price (such as resource investment; Labroo & Kim, 2009), older adults might

value stability more positively than younger adults. In other words, if the costs of maintaining stability were made salient, younger adults should evaluate stability similarly positively as older adults.

Study 1

The first study assessed evaluations of developmental trajectories (gain, stability, loss) in four functional life domains (subjective well-being, social relations, cognition, physical functioning).

Method

Procedure

After providing informed consent, participants filled out a brief demographic questionnaire. Participants were then introduced to three types of graphic depictions of developmental trajectories (indicating gain, stability, loss) in four life domains (subjective well-being, social relations, cognition, physical functioning). Separately for each domain, they were asked to assess how they would evaluate their own development if it resembled the particular trajectory. As a way of reimbursing participants, we raffled 50 vouchers worth 15 Euro / 20 CHF (approximately 20 USD) for different stores.

Sample

The total sample was comprised of $N = 119$ younger ($n = 49$; 65% women, 16-29 years, $M_{age} = 23.28$, $SD = 3.07$), middle-aged ($n = 29$; 76 % women; 30-54 years, $M_{age} = 38.68$, $SD = 1.38$) and older adults ($n = 41$; 56% women, 57-74 years, $M_{age} = 65.29$, $SD = 4.7$) from Switzerland, Germany, and Austria who were recruited via our participant pool and postings on various web pages. Overall, the sample was well educated with 88% of the younger, 62% of the middle-aged, and 49% of the older adults holding a degree from the highest school track in these countries (Abitur). In order to test if sex or education might influence the results of this study, all analyses reported in the results section were also run

testing interactions with sex and education. As no effect of interest reached significance, analyses will be reported across sex and educational groups.

Measures

The **evaluation of the developmental trajectory** was assessed using three items (positive, pleasant, and win) representing a positive evaluation and three items (negative, unpleasant, and loss) representing a negative evaluation of the trajectory rated on a scale from 1 (*do not agree at all*) to 7 (*agree completely*). The mean of the three items was treated as a dependent variable measuring the degree of **positive evaluation** (Cronbach's Alpha for gain trajectory = .76, stability trajectory = .83, loss trajectory= .80) or **negative evaluation** (gain trajectory = .71, stability trajectory = 79, loss trajectory = .77).

Results and Discussion

Hypotheses were tested using a 4 (domain: well-being, social relations, cognition, physiological functioning) x 3 (trajectory: gain, stability, loss) x 3 (age group: young, middle-aged, older) mixed MANOVA with domain and trajectory as within participants factors and age group as a between participants factor. The positive and negative evaluations of the trajectories were the dependent variables. There was a significant effect of age on the combined dependent variables ($F(4, 230) = 7.53$, $p < .001$, $\eta^2 = .12$) and a main effect of trajectory ($F(4, 113) = 294.10$, $p < .001$, $\eta^2 = .91$). The domain effect was not significant ($F(6, 111) = 1.26$, $p = .24$, $1 - \beta = .60$). The two-way interaction of trajectory x age group was significant ($F(8, 226) = 6.94$, $p < .001$, $\eta^2 = .20$), but not the interaction of domain x age group ($F(12, 222) = 1.3$, $p = .24$, $1 - \beta = .71$) or the three-way interaction of age group x trajectory x domain ($F(24, 210) = 1.26$, $p = .28$, $1 - \beta = .87$).

Age-Differences in the Evaluations of Trajectories

Following up the trajectory x age group interaction, we ran UNIANOVAs with age group as a between participants factor and positive and negative evaluations of the trajectories as dependent variables. The results are displayed in Figure 1.

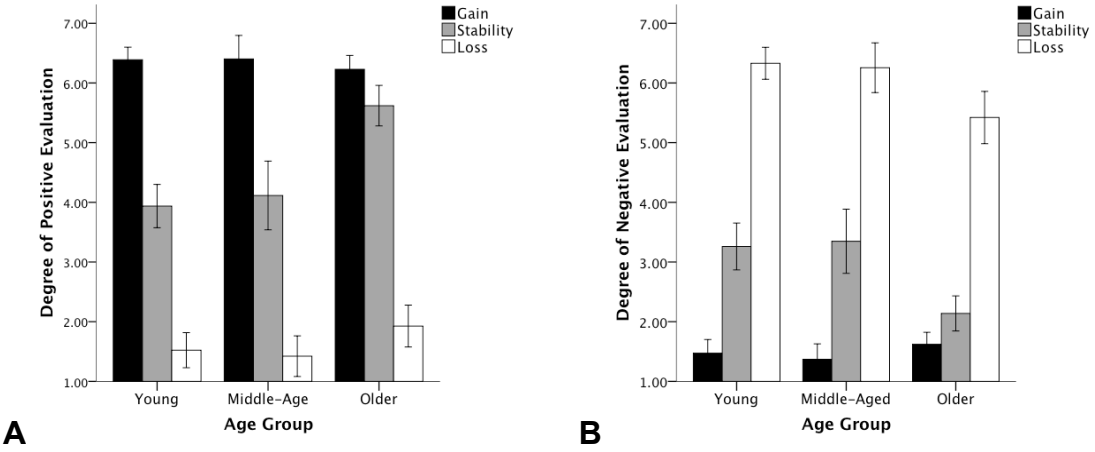

Figure 1. Mean evaluations of the gain, stability, and loss trajectory across four life domains regarding their (A) positivity and (B) negativity by age group. Error bars represent confidence intervals.

There was no difference between the age groups in the evaluation of *gain* trajectories (positive evaluations: $F(2, 116) = .551$, $p \geq .58$, 1- $\beta = .14$; negative evaluations: $F(2, 116) = 1.09$, $p \geq .34$, 1- $\beta = .24$). As predicted, significant age-group differences emerged in the comparison of the stability trajectories (positive evaluation: $F(2, 116) = 21.96$, $p < .001$, $\eta^2 = .14$; negative evaluation: $F(2, 116) = 1.09$, $p \geq .34$, $\eta^2 = .17$). Follow-up comparisons using Scheffé-Tests showed that older adults evaluated the stability trajectories more positively ($M = 5.62$, $SD = 1.48$) and less negatively ($M = 2.14$, $SD = .93$) than younger (positive: $M = 4.11$, $SD = 1.51$; negative: $M = 3.23$, $SD = 1.37$) and middle-aged adults (positive: $M = 3.94$,

SD = 1.26; negative: *M* = 3.35, *SD* = 1.41; both *ps* ≤ .001). Younger and middle-aged adults did not differ in the positive and negative evaluations of the stability trajectories ($p \geq .84$).

There was no significant difference between the age groups regarding the positive evaluation of loss trajectories ($F(2, 116) = 2.57$, $p \geq .08$, $1\text{-}\beta = .50$). However, age groups differed in how negatively they evaluated loss trajectories ($F(2, 116) = 7.96$, $p < .001$, $\eta^2 = .12$). Older adults evaluated loss trajectories less negatively (*M* = 5.42, *SD* = 1.39) than younger (*M* = 6.33, *SD* = .93) and middle-aged adults (*M* = 6.15, *SD* = 1.09; both *ps* < .05). Younger and middle-aged adults did not differ from each other in the negative evaluations of the loss trajectories ($p \geq .96$).

Study 1 examined age-related differences in the evaluation of gain, stability, and loss trajectories. As expected, there was consensus across age groups regarding the subjective evaluation of clear-cut gain and loss trajectories: Gains are positive and losses are negative for all age groups. However, age-related differences in the evaluation of developmental trajectories emerged in the evaluation of stability. As predicted, older adults evaluated stability trajectories more positively and less negatively than younger and middle-aged adults. Furthermore, we found an "evaluation split" regarding the loss trajectories. There was agreement that losses are not positive. However, age groups differed in how negatively they evaluated a loss trajectory. Older adults evaluated the loss trajectory as less negative than younger and middle-aged adults.

Study 2

Study 2 was aimed at assessing evaluations on an explicit level (similar to the assessment in Study 1) as well as on a more implicit level (using the affective misattribution paradigm by Payne, Cheng, Govorun, & Stewart, 2005). Further, we examined systematic age-related sensitivity to resource expenditure when evaluating stability. In order to test the

context dependency of explicit evaluations we used trajectories in four functional life domains (subjective well-being, social relations, cognition, and physical functioning).

Method

Procedure

After providing informed consent, participants were introduced to the graphic illustration of developmental trajectories. Developmental trajectories were graphically depicted in form of an ascending line (gain), a horizontal line (stability), or a descending line (loss) in an axis of abscissas with time on the abscissa and level of functioning on the ordinate. After being introduced to these graphs, participants were then asked to draw their personal trajectory in the four functional domains (subjective well-being, social relations, cognition, physical functioning). They were encouraged to ask clarification questions should any understanding problems occur. We already successfully implemented this procedure in previous studies (Mustafić & Freund, 2011). The assessment of explicit evaluations of developmental trajectories was followed by the assessment of implicit evaluations. In order to test *explicit evaluations*, participants were seated in front of a computer and told that a slide will be presented on the computer screen announcing the functional domain to which the subsequent trajectory should be applied. The second slide showed the graphical depiction of a developmental trajectory (gain, stability, or loss). Following this picture, a pattern mask consisting of black and white "noise" appeared. This was done in order to keep the procedure of the implicit (described below) and the explicit assessment as similar as possible. Participants were asked to spontaneously evaluate the trajectory using a key labeled *pleasant* or *unpleasant*. The pattern mask disappeared as soon as the participant responded. Piloting with two younger and three older participants revealed an optimal presentation time of 300 ms for the domain slide and for the trajectory slide as presentation times that enable the three age groups on average to react fast and

spontaneously. The task lasted approximately 5 minutes. Participants completed 36 randomly ordered trials.

Implicit evaluations were assessed using the affect misattribution paradigm (Payne et al., 2005). This task was again presented on the computer. Participants first saw a graph representing a developmental trajectory (gain, stability, loss) using the identical stimuli as in the explicit evaluation task. The first screen was followed by a Chinese pictograph. Both stimuli were presented for 250 ms. Following the pictograph, a pattern mask consisting of black and white "noise" appeared until participants responded if they evaluated the pictograph as *pleasant* or *unpleasant*. The task lasted approximately 5 minutes. Each trajectory was presented three times per domain, resulting in 36 trials. Additionally, we included 12 neutral trials depicting geometrical figures instead of trajectories. Developmental trajectories and neutral trials were randomized, as were the functional domains.

In the last part of the study, we varied the salience of resource expenditure. For this purpose, we randomly assigned participants to one of the two conditions (high salience, control condition), resulting in a between-participant design for this part of the study. The control group was asked to evaluate stability in the four life domains in the same way we assessed the evaluations in Study 1 (no mentioning of resource expenditure). The experimental group was instructed to evaluate stability after reading instructions that described the necessity of resource expenditure in order to maintain over time a certain level of functioning in the four functional life domains (e.g., to "regularly take care for friendships" in the domain of social relations or to "regularly exercise" in physical functioning). The first set of explicit and implicit evaluations was assessed using Eprime (Version 2.0); the third set of evaluations depending on salience of resource expenditure was collected online with the survey program www.soscisurvey.de.

The procedure lasted approximately 30 minutes in total and was reimbursed with 10 CHF (approx. 11.32 USD)

Sample

Participants were mainly recruited via the participant pool of our laboratory or recruited on the university campus by research assistants. The total sample was comprised of $N = 182$ younger adults ($n = 60$; 48% women, 18-35 years, $M_{age} = 25.38$, $SD = 4.09$), middle-aged adults ($n = 54$; 63% women; 38-59 years, $M_{age} = 48.55$, $SD = 5.85$) and older adults ($n = 68$; 57% women, 60-84 years, $M_{age} = 71.70$, $SD = 5.18$). Again, the sample was well educated with 95% of the younger, 55% of the middle-aged and 35% of the older adults holding a degree of the highest school track in Switzerland (Abitur). All analyses were first run with education and sex to test for possible interaction effects of age with sex or education. As no main and no interaction effect reached significance, all analyses were run across sex and educational groups.

Measures

Explicit and implicit evaluations of trajectories. Following Payne et al. (2005), we calculated the ratio of "pleasant" responses to the gain, stability, and loss trajectories divided by the total number of trials. The explicit and implicit measures of gain evaluations did not correlate ($r = -.08$, $p = .82$). The associations between the measures were higher for implicit and explicit evaluations of stability ($r = .25$, $p < .001$) and loss trajectories ($r = .20$, $p = .05$).

The **evaluation of the stability trajectory depending on resource expenditure salience** was the same as the assessment of the evaluation of trajectories used in Study 1.

Results

Explicit Evaluations of Trajectories

Results regarding explicit and implicit evaluations of trajectories are depicted in Figure 2.

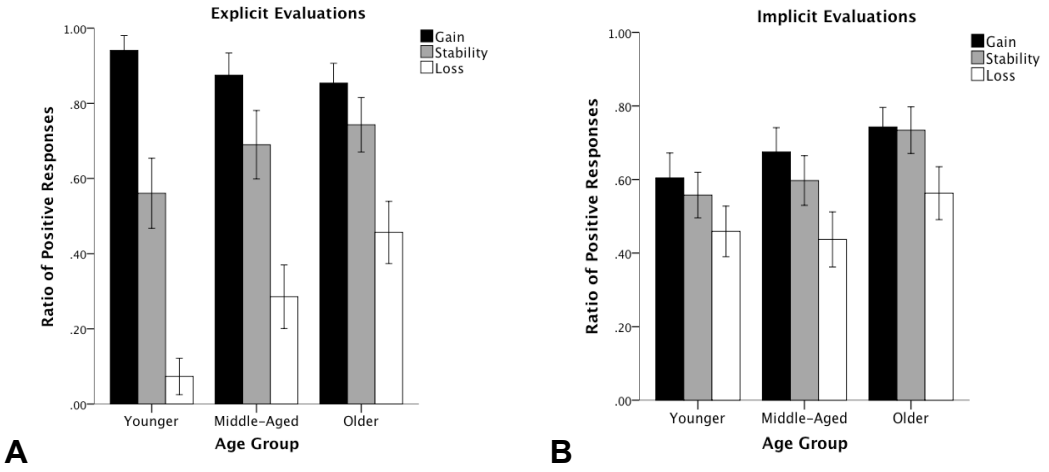

Figure 2. Mean ratio of positive gain, stability, and loss trajectory evaluations measured (A) explicitly and (B) implicitly by age group. Error bars represent confidence intervals.

Hypotheses were tested using a mixed MANOVA with domain as a within participants factor, age group as between participant factor, and the ratio of positive explicit responses to the gain, stability, and loss trajectories as dependent variables. The 4 (domain: subjective well-being, social relations, cognition, physiological functioning) x 3 (age group: young, middle-aged, older) MANOVA revealed a significant effect of age group ($F(6, 304) = 9.07$, $p < .001$, $\eta^2 = .15$). Neither the effect of domain ($F(9, 146) = 1.85$, $p = .06$, $\eta^2 = .73$) nor the interaction of domain x age group ($F(18, 292) = .83$, $p = .66$, $\eta^2 = .05$) was significant.

Follow-up comparisons between age groups showed that there were significant differences between age groups in the evaluation of all three trajectories (gain: $F(2, 179) =$

3.21, $p < .05$, $\eta^2 = .03$; stability: $F(2, 179) = 5.00$, $p < .05$, $\eta^2 = .05$; loss: $F(2, 179) = 27.57$, $p < .001$, $\eta^2 = .23$). Scheffé-Tests revealed that younger adults evaluated the *gain* trajectories significantly more positively ($M = .95$, $SD = 1.5$) than older adults ($M = .85$, $SD = .22$, both $p < .05$). Younger and middle-aged adults ($M = .87$, $SD = .21$) as well as older and middle-aged adults did not differ regarding the evaluation of gain trajectories ($p < .22$).

Replicating results of Study 1, older adults evaluated the stability trajectories ($M = .74$, $SD = .30$) more positively than younger adults ($M = .56$, $SD = .36$, $p < .05$). Older and middle-aged ($M = .69$, $SD = .33$, $p < .68$) as well as younger and middle-aged adults ($p < .12$) did not differ. Finally, regarding loss trajectories, older adults provided a more positive evaluation ($M = .45$, $SD = .34$) than middle-aged adults ($M = .28$, $SD = .31$) or younger adults ($M = .07$, $SD = .18$, both ps $< .001$). Indicating a linear trend across adulthood, middle-aged adults evaluated loss more positively than younger adults ($p < .05$).

Implicit Evaluations of Trajectories

A MANOVA with the between participant factor 3 (age group: young, middle-aged, older) evinced a significant main effect of age group ($F(6, 360) = 3.60$, $p = .002$, $\eta^2 = .06$). The data revealed a general positivity effect in older adults' evaluations of Chinese characters ($M = .68$, $SD = .20$) compared to younger ($M = .54$, $SD = .20$) and middle-aged adults ($M = .57$, $SD = .18$; both ps $< .05$). Younger and middle-aged adults did not differ ($p \leq .72$). Post-hoc comparisons using Scheffé-Tests (see Figure 2) revealed that older adults evaluated the Chinese character following a gain trajectory ($M_{\text{older}} = .74$, $SD = .22$) significantly more positively compared to younger adults ($M_{\text{younger}} = .60$, $SD = .27$) (older and middle-aged adults ($M_{\text{middle-aged}} = .67$, $SD = .24$) did not differ, $p = .31$; middle-aged and younger adults did not differ, $p = .30$). Similarly, older adults evaluated the Chinese character after the stability trajectory ($M_{\text{older}} = .73$, $SD = .26$) more positively compared to younger ($M_{\text{younger}} = .55$, $SD = .24$; $p < .001$) *and* middle-aged adults ($M_{\text{middle-aged}} = .60$, $SD =$

.25; p = .01; again, middle-aged and younger adults did not differ, p = .7). Finally, older adults evaluated the Chinese character following a loss trajectory (M_{older} = .56, SD = .30) significantly more positively compared to middle-aged adults ($M_{middle\text{-}aged}$ = .46, SD = .27; p = .05; older and younger ($M_{younger}$ = .45, SD = .27) adults did not differ, p = .11).

Salience of Resource Expenditure

A mixed MANOVA with the between participants factors: 2 (condition: no resource manipulation, resource manipulation) x 3 (age group: young, middle-aged, older), and the within participants factor 4 (domain: subjective well-being, social relations, cognition, physical functioning), and positive and negative evaluations of stability as a dependent variable evinced a significant effect of age group (F(4, 348) = 9.75, p < .001, η^2 = .08), and a significant main effect of condition (λF(2, 174) = 7.39, p < .001, η^2 = .10). The main effect of domain (F(6, 170) = 1.42, p = .21, 1 – β = .54) and all two and three-way interaction effects were not significant (condition x age group: F(4, 348) = 1.33, p = .261, 1 – β = .41; domain x condition's F(6, 170) = .70, p = .65, 1 – β = .27; domain x age group: F(12, 340) = 1.54, p = .11, 1 – β = .82); domain x condition x age group: F(12, 340) = 1.18, p = .29, 1 – β = .68).

Follow-up analyses using Post-hoc Scheffé-Tests revealed that older adults evaluated the stability trajectory less negatively (M_{old} = 2.27, SD = 1.05) and more positively (M_{old} = 5.81, SD = 1.29) than younger adults (negative: M_{young} = 2.82, SD = 1.05, positive: M_{young} = 5.81, SD = 1.29, ps < .05). Younger and middle-aged adults (negative: $M_{middle\text{-}aged}$ = 2.29, SD = 1.33, positive: $M_{middle\text{-}aged}$ = 5.33, SD = 1.44) differed in the positivity of the evaluation of gain trajectories (p < .05), but not in the negativity ($p \leq .76$). Older and middle-aged adults did not differ (ps ≥ .12).

Indicating a successful manipulation check, across age groups participants evaluated stability more positively (F(2, 175) = 16.51, p < .001, η^2 = .16) and less negatively (F(2,

175) = 4.85, p = .009, η^2 = .05) in the resource manipulation condition compared to the condition without resource manipulation. Similarly, comparing the explicit evaluations at the beginning of the experiment with the evaluations at the end of the experiment within the resource manipulation group, shows that the positive explicit evaluation of stability increased after the manipulation (effect of condition: F(1, 83) = 5.59, p = .02, η^2 = .06). Again, this indicates a successful manipulation of resource expenditure. Contrary to the resource-expenditure hypothesis, there was a significant effect of age group (F(2, 83) = 13.44, p < .001, η^2 = .24) but no interaction of condition x age group (F(2, 83) = 2.37, p = .10, 1 - β = .46).

In sum, the second study replicated results from Study 1 regarding age-related differences in the explicit evaluation of different developmental trajectories. Interestingly, implicit evaluations did not conform to this pattern of age-related differences in the evaluation of stability trajectories. Instead, older adults showed a general positivity effect such that they evaluated all developmental trajectories more positively than younger or middle-aged adults. Contrary to our expectations regarding the role of resource expenditure for evaluating stability trajectories, the resource manipulation did not eliminate the age-group differences.

General Discussion

How does the affective evaluation of stability change across adulthood? The presented research suggested that stability becomes more positive and prevention of loss becomes less negative across adulthood. However, this only holds for an explicit measure of the evaluation of stability. Results of the implicit evaluation measure suggest that older adults evaluated all trajectories more positively than younger and middle-aged adults.

One of the reasons for the divergent results of the explicit and the implicit measures of developmental trajectories might be methodological and concerns the possibility of a

differential structural fit of research designs for explicit and implicit measures. This is rather unlikely, however, as the research design for the explicit and implicit measures were highly similar. Another explanation for the divergence of the explicit and the implicit measure is that the evaluation of stability trajectories involves complex and deliberate processes. Such deliberate processes might be necessary in order to arrive at the conclusion that stability constitutes a positive developmental trajectory when losses are expected (as is done in older adulthood; Heckhausen et al., 1989). Previous research suggests that older adults use negative expectations for "most others" as a contrasting comparison standard for their own development (Heckhausen & Krueger, 1993). Future studies are needed to test if people do, in fact, use their developmental expectations regarding their own development as a standard of comparison to evaluate developmental trajectories.

Another factor contributing to age-related differences in the evaluation of stability trajectories might be that it might be more resource intense to achieve stability in older compared to younger or middle adulthood. Moreover, previous research on goal orientation suggests that with increasing age, as resources become scarcer, older adults might become more sensitive to resource restrictions (Ebner et al., 2006). As people tend to value achievements and things when their cost is higher (e.g., Labroo & Kim, 2009), older adults might view stability as more positive than younger or middle-aged adults. For the younger age groups, stability might seem to come without any costs. Following this rationale, we included an experimental condition that emphasized the resource costs involved in maintaining functioning (i.e., stability). Results of this manipulation, however, did not support our hypotheses. It might well be the case that people need to experience losses in resources in order to value the maintenance of functioning. The manipulation in the current study might have been too subtle to affect younger and middle-aged adults' evaluation of stability. In addition, the samples of the two studies were fairly resource rich as indicated

by the high level of education. Younger and middle-aged adults who have experienced severe limitations of resources might be more sensitive to such experimental manipulations of resource expenditure necessary for maintaining functioning.

Interestingly, on an explicit level, gains seem to become less positive with increasing age. This might be the case because gains are more and more difficult to attain with increasing age, resulting in "sour-grape reactions" of devaluing gain trajectories (e.g., secondary control, Heckhausen & Schulz, 1995; accommodative coping, Brandtstädter & Renner, 1995).

Previous research suggests that subjective conceptualizations of development are multidimensional (Mustafić & Freund, 2011). Interestingly, the current studies suggest that this is not the case for *evaluations* of developmental trajectories. There were no differences in the evaluation of stability between the domains of subjective well-being, social relations, cognition, and physical functioning. The finding suggests that there is a generalized negative evaluation of stability in younger adulthood and an equally generalized positive evaluation of stability in middle and older adulthood across various domains of functioning. However, the current study only included four domains of functioning and more research is needed covering a more diverse area of life domains as a more stringent test of multidimensionality in the evaluation of developmental trajectories.

One of the shortcomings of the current studies is that they involve cross-sectional comparisons between age groups. As is always true for cross-sectional designs, the current research cannot disentangle age and cohort effects (Baltes, 1968). The older adults might value stability more not because of their age but because they have experienced the difficult and resource-poor post-WW2 times. Having experienced this kind of deprivation might have led this generation to appreciate stability more than younger generations. Note,

however, that the resource manipulation in Study 2 did not result in a higher appreciation of stability in the younger age group.

Outlook

The research presented here aimed at demonstrating age-related differences in the evaluation of developmental trajectories of gain, stability, and decline using explicit and implicit measures. Results suggest that the evaluations of stability become more positive with age. This research might serve as a starting point for future studies including more differentiated emotional reactions going beyond positive and negative evaluations and more differentiated comparisons. For instance, older adults might experience relief when a loss they expected does not occur. Younger adults might be disappointed if they gain less than they thought they might. Thus, we hope that the current studies contribute to the growing research on subjective developmental conceptualizations by starting to address the important question of the evaluation of developmental trajectories.

Part III:

On Gains and Losses, Means and Ends:

Goal Orientation and Goal Focus Across Adulthood

Alexandra M. Freund, Marie Hennecke, & Maida Mustafić

Chapter in press in:

R. Ryan (Ed.). *Oxford handbook of motivation.* Oxford: Oxford University Press

Abstract

Personal goals guide behavior towards a desired outcome, motivate behavior over time and across situations, provide direction and meaning, and contribute to the acquisition of skills and subjective well-being. The adaptiveness of goals, however, might vary with dimensions such as their orientation towards the achievement of gains, maintenance of functioning, or the avoidance of losses. We argue that goal orientation is most adaptive when it corresponds to the availability of resources and the ubiquity of losses. In line with this argument, younger adults show a predominant orientation towards, whereas goal orientation shifts towards maintenance and avoidance of loss across adulthood. This shift in goal orientation seems adaptive both regarding subjective well-being as well as engagement in goal pursuit. A second goal dimension that has been largely overlooked in the literature is the cognitive representation of goal pursuit primarily in terms of its means (i.e., process focus) or its ends (i.e., outcome focus). This chapter investigates the antecedents and consequences of goal focus. In particular, it highlights the importance of factors related to chronological age (i.e., the availability of resources, future time perspective, goal orientation, motivational phase) for the preference for and adaptiveness of an outcome or process focus. Finally, we posit that a process focus leads to more adaptive behavioral and affective reactions when people encounter failure during goal pursuit.

Keywords: Adult development, goal orientation, goal focus, means, ends, resources, time perspective, failure

Introduction

Imagine a young woman in her mid 20s and her grandmother, an older woman in her late 60s. Now think about the personal goals they might pursue. Most likely, the younger woman will pursue goals related to finding a life partner, to finishing her education and to establish a professional career. The goals of the older woman are more likely to center around the domains of health, cognitive functioning, independence, and the well being of her loved ones (Freund & Riediger, 2006). Beyond the differences in content, however, two other age-related differences in the goals of a younger and an older adult might be evident. First, the orientation of goals is likely to shift from gains in young adulthood to maintenance in middle adulthood and the prevention of losses in older age (e.g., Freund & Ebner, 2005). For example, a young woman might aim at improving her fitness level, whereas her grandmother might be more likely to try to maintain her physical fitness in the face of aging. Second, younger adults might focus more on the outcome of goal pursuit whereas older adults might focus more on the process (Freund, Hennecke, & Riediger, 2010). For example, the young woman might focus on the desired outcome of exercising regularly such as her body shape and her overall fitness. In contrast, her grandmother might think primarily about how she can to exercise regularly in a manner that makes her feel good already during exercise. In this chapter we aim at integrating these two dimensions of personal goals and discuss their change across adulthood. First, however, we want to highlight the importance of personal goals throughout the lifespan.

The Importance of Goals for Adult Development

Laypeople as well as motivation researchers seem to agree that setting and pursuing goals has positive consequences. Goals give life meaning, direction, and contribute to happiness and subjective well-being (e.g., Emmons, 1996; Klinger, 1977; Little, 1989). Goals have been defined as cognitive representations of personally desired (or dreaded) states to be approached (or avoided), such as becoming a nurse (or not becoming like one's parents) through action. More specifically, they encompass *means* of goal pursuit and desired *outcomes* of it (e.g., Kruglanski, 1996). The activation of goals affects the encoding, storage, and retrieval of information, and guides attention as well as behavior (e.g., Wyer & Srull, 1986). As goals are comprised of means and ends, goals might channel and organize information in terms of means and ends (e.g., Woike, Lavezzary, & Barsky, 2001). Each time a goal is activated, the associated means and ends (as well as their emotional correlates such as enjoyment or fear) are also activated. Consequently, the activation of goals enhances the likelihood of engaging in goal-relevant behaviors (i.e., means), which can occur even automatically (e.g., Bargh & Ferguson, 2000; Bargh & Gollwitzer, 1996). Goals, then, direct attention and information processing and motivate behavior. Thereby, goals organize behavior over time and across situations, and provide a sense of direction and purpose in life (Freund, 2007). Moreover, research suggests that goal pursuit enhances performance (e.g., Austin & Vancouver, 1996; Emmons, 1989, 1996; Freund, 2007). Therefore, it is not surprising that the goal concept seems particularly well suited for understanding how people develop successfully over time.

However, as Ryan and colleagues put it: Not all goals are created equal (Ryan, Sheldon, Kesser, & Deci, 1996). Goals differ in their content, concreteness, difficulty, time frame, and their orientation towards gains and losses (e.g., Austin & Vancouver, 1996; Freund & Ebner, 2005; Little, 1989; Locke & Latham, 2002; Wiese & Freund, 2005). Such goal dimensions

influence the adaptiveness of goals. Various goal dimensions have been distinguished, such as approach – avoidance (e.g., Elliott & Friedman, 2007), promotion – prevention (e.g., Higgins, 1997), intrinsic – extrinsic (e.g., Deci, Koestner, & Ryan, 1999; Krapp, 2005), and mastery – performance (e.g., Dweck & Leggett, 1988). This chapter centers around two goal dimensions that we believe to change systematically across adulthood: First, the orientation of personal goals towards gains, maintenance, or the prevention of losses (e.g., Freund & Ebner, 2005). Second, whether a person focuses on the *outcome* of goal pursuit (short-term and long-term consequences) or on the *process* of goal pursuit (means of goal attainment) (e.g., Freund et al., 2010; Sansone & Thoman, 2005; Zimmerman & Kitsantas, 1997).

The importance of personal goals for adult development has been acknowledged by different action-theoretical approaches (e.g., Brandtstädter & Renner, 1990; Heckhausen & Schulz, 1995; Freund & Baltes, 2000). In particular, the model of selection, optimization, and compensation (SOC-model, Baltes & Baltes, 1990) has stressed the importance of setting, pursuing and maintaining personal goals for successful development.

Successful Development Through Personal Goals

One of the central propositions of lifespan psychology is the *multidirectionality* of development. That is, development comprises not only trajectories of growth but also trajectories of decline (Baltes, 1987; Labouvie-Vief, 1981). Successful development has often been defined as the maximization of gains and the simultaneous minimization of losses (see Freund & Riediger, 2003, for a review of definitions of successful development). According to the SOC-model (Baltes & Baltes, 1990), an optimal ratio of gains to losses can be achieved by the orchestrated use of three processes of developmental regulation, namely selection, optimization, and compensation. As elaborated in more detail elsewhere (e.g., Freund & Baltes, 2000; Freund, Li, & Baltes, 1999; Freund, 2006), the action-theoretical specification of the SOC-model posits that developing and committing to a hierarchy of personal goals (i.e.,

elective selection) and engaging in goal-directed actions and means (i.e., *optimization*) are essential for achieving higher levels of functioning (i.e., maximizing gains). In order to maintain a given level of functioning in the face of inevitable losses in resources people encounter throughout their lives, people need *compensate* for their losses (e.g., by substituting goal-relevant means that are no longer available). When the costs for optimization or compensation outweigh the expected gains, according to the SOC-model it is more adaptive to reconstruct one's goal-hierarchy by focusing on the most important goals, developing new goals, or adapting goal standards (i.e., *loss-based selection*). Thus, the SOC-model conceptualizes processes promoting gains (elective selection, optimization) but also processes to counteract losses (compensation, loss-based selection).

Empirical evidence supports the adaptiveness of self-reported selection, optimization, and compensation throughout adolescence (Gestsdottir & Lerner, 2007), adulthood and into very old age (e.g., Freund & Baltes, 1998; 2002; Wiese, Freund, & Baltes, 2000; 2001; Ziegelmann & Lippke, 2007). The use of SOC strategies seems to be particularly helpful for persons with fewer resources (Jopp & Smith, 2006; Lang, Rieckmann, & Baltes, 2002;Young, Baltes, & Pratt, 2007).

Goal Selection: Managing Multiple Goals

A series of studies by Riediger and colleagues (Riediger & Freund, 2004, 2006, 2008; Riediger, Freund, & Baltes, 2005) demonstrated the role of the *selection* of goals for successful goal pursuit. More specifically, results by Riediger and colleagues stress the importance of considering the interrelations of personal goals. Conflict between goals might occur because resources are insufficient to support both goals at the same time of through incompatible strategies. For instance, wanting to enjoy food and trying to lose weight imply incompatible eating behaviors, leading to goal conflict. Goals can facilitate each other by sharing the same strategies. For example, the two goals to lose weight and to lead a healthy life style are both

served by the same strategy of working out regularly. Goal conflict and facilitation have are two largely independent goal dimensions and show differential associations with affective experience and goal-relevant behavior. Goal conflict seems to impair affective well-being, facilitation is associated with goal pursuit in everyday life and subsequent goal attainment (Riediger et al., 2005). Interestingly, older adults appear to gain in motivational competence regarding the selection of goals. They report more goal facilitation and less conflict among their goals than younger adults (Riediger et al., 2005). Importantly, this result was not simply due to a reduction in the number of goals but to focusing on personally important, superordinate goals. Focusing one's goals on central and similar life-domains contributed to higher facilitation among goals, which, in turn, lead to stronger goal engagement and achievement (Riediger & Freund, 2006). Age-related increases in motivational selectivity, then, are one way of managing the increasing limitation of resources in adulthood. Another way of dealing with conflicts due to goals competing for the same limited resources is prioritizing. Wiese and Freund (2001) showed that young adults who experience conflicts between work- and family-related goals report fewer strains and higher subjective well-being when they prioritize one goal (and temporally postpone the other). Taken together, this research supports the importance of selection as a key process for successfully managing multiple goals.

Optimization and Compensation: A Tale of the Shifting Goal Orientation Across Adulthood

As mentioned above, one of the central tenets of life-span developmental psychology holds that development encompasses both gains and losses throughout the life span. Examples for ubiquitous losses in later adulthood are health-related and cognitive decline or the loss of social partners and social status through retirement (Baltes & Smith, 2003). In contrast, affective well-being (e.g., Röcke, Li, & Smith, 2009), motivational competence (e.g., Riediger

& Freund, 2008) or self-regulation (Hennecke & Freund, in press) appear to increase across adulthood and into old age. The ratio of gains to losses, however, changes across the life span, encompassing decreasing gains and increasing losses throughout adulthood and into old age (e.g., Baltes, 1997; Baltes, Lindenberger, & Staudinger, 1998; Heckhausen, Dixon, & Baltes, 1989). Addressing this changing ratio of gains to losses, the SOC-model holds that goals directed at the optimization of gains might be more important at younger ages whereas goals directed at the maintenance and avoidance of losses might gain in importance with increasing age.

Arguing from an evolutionary standpoint as well as from a developmental perspective, it is advantageous to possess as many resources as possible (see Freund & Riediger, 2001). Resources are essential for reproductive success and survival. They signal success, relative social standing, and good genetic material to potential mates. They enhance attractiveness and successful reproduction and provide for the upbringing of offspring (Buss, 1999). Gaining resources appears to be a primary motivation in young adulthood, a phase in life when most people have not yet had opportunities to accumulate many resources that are advantageous for their reproductive success. Moreover, social expectations and developmental tasks for young adults are geared towards gains (e.g., gaining education or professional skills, founding a family, building a home, establishing a career). Young adults have large potentials for functional gains and still need to realize these potentials. As Raynor (1982) puts it, younger adults are still in the process of "becoming." In other words, before younger adults can start protecting and conserving resources, they need to acquire skills and resources and build upon their status. In contrast, with increasing age, one is increasingly likely to have reached one's personal asymptote of performance in many areas of life, making the achievement of new gains less and less likely. Moreover, throughout their lives older adults have accumulated resources including skills, material belongings, as well as social relations that need to be protected against

losses. Given the ubiquity of losses in older adulthood and the corresponding social expectations (Heckhausen et al., 1989), older adults are likely to be chronically aware of threatening losses. In late adulthood, then, preserving resources and counteracting losses may become the primary motivation outweighing tendencies to accumulate new resources (Freund & Ebner, 2005; Staudinger, Marsiske, & Baltes, 1995).

Consistent with this hypothesis, J. Heckhausen (1999) found that younger adults reported more goals in domains associated with striving for gains and fewer goals in domains reflecting the avoidance of losses than middle-aged or old adults. Similarly, Ebner, Freund, and Baltes (2006) showed that, compared to older adults, younger adults rated their personal goals as having a stronger focus on gains. Conversely, older adults reported a higher focus on maintenance and prevention of loss in their personal goals than younger adults. Moreover, in two further studies using a forced-choice paradigm for tasks pertaining to physical fitness and cognitive functioning, younger adults were more likely to adopt goals focusing on achieving new gains compared to older adults who preferred goals focusing on the maintenance of their level of functioning. Attesting to the role of resources for goal-orientation, Ebner et al. (2006) showed that younger adults shifted to a preference for maintenance goals when resources were perceived as being limited.

The shift in goal orientation across adulthood seems adaptive. Whereas younger adults seem to suffer from a goal orientation towards maintenance and avoidance of loss, older adults' subjective well-being was positively related to a maintenance orientation. Using behavioral indicators of goal pursuit, Freund (2006) showed that younger adults pursue a given goal more persistently when it is oriented towards achieving gains (optimization goal), whereas older adults are more persistent when pursuing the goal to counteract losses (compensation goal). In addition, when confronted with a resource loss, compensatory activities is related to positive affect in older adults (Duke, Leventhal, Brownlee, & Leventhal, 2002). In sum, then, goal

orientation towards gains and losses appears to change with the shifting ratio of gains to losses across adulthood. Moreover, this shift in goal orientation seems adaptive both regarding subjective well-being as well as actual goal pursuit.

Goal Focus: Process or Outcome

The previous sections focused on *goal selection* and the shift in goal orientation towards gains and losses across adulthood. In the following, we want to address how the cognitive representation of *goal pursuit* primarily in terms of its means (process focus) or its outcome (outcome focus) might affect goal-relevant behavior as well as affect, and how it might change with age.

Let us open this section with an example of process and outcome focus. Two people pursuing the goal of completing a 20-km hike in the Alps within five hours may focus on very different aspects of this goal: One of them might focus primarily on the consequences of successfully reaching the destination within the allotted time, while the other might focus more on pacing herself by monitoring her pulse rate and breathing. What factors determine whether a person focuses more on the outcome or the process when pursuing goals? Are there differences in adaptiveness of a stronger focus on the outcome or the process of goal pursuit? We posit that factors related to chronological age, namely the availability of (physical and cognitive) resources, future time perspective, and a goal orientation towards achieving gains or maintenance of functioning contribute to a preference for and adaptiveness of either an outcome or a process focus during goal pursuit. In addition, taking a closer look at the dynamics of goal setting and pursuit, we posit that the motivational phase and the closeness to a deadline determine whether people focus on the process or the outcome of goal pursuit. Finally, we discuss the role of goal focus when goal pursuit is hampered by setbacks or failure.

The concept of outcome and process focus is related – but not identical – to the concepts of extrinsic and intrinsic motivation as well as performance and mastery orientation. In

accordance with Sansone and Thoman (2005), we define *outcome focus* as the motivation to engage in an activity because it is a means to a certain *end*. We define *process focus* as the cognitive salience of aspects of the goal that are related to the *means*, though, whereas Sansone and Thoman define it as the (expected) experience of interest in an activity. It is likely that people only persist in a certain activity for longer periods of time, however, if they experience it as being somehow rewarding, be it due to their interest in it, their positive affect, or its instrumentality for achieving a desired outcome. Focusing on the outcome or the process of goal pursuit is like beaming a flashlight on either the means or the end of goal pursuit, thus highlighting aspects of goal pursuit either related to the process (e.g., Do I have the means necessary to achieve this goal?) or the outcome (e.g., When will I achieve the goal?).

Differentiating Goal Focus From Related Constructs

Linking Outcome and Process Focus to Extrinsic and Intrinsic Motivation

Extrinsic motivation is characterized by a focus on the consequences of goal achievement (e.g., external rewards for achieving a certain goal), whereas intrinsic motivation is typically defined as a focus on the task at hand (e.g., enjoyment of or interest in the goal-relevant activity). Compared to extrinsic motivation, intrinsic motivation is associated with voluntary involvement, more interest, and higher persistence in a task (e.g., Deci, Koestner, & Ryan, 1999; Krapp, 2005; Lepper, 1981). Intrinsic motivation implies that a person focuses on the satisfaction derived from the activity rather than on the external consequences of goal achievement. For instance, when one's goal is to paint a picture, either the amount of money the picture will bring in at the next exhibition (i.e., extrinsic motivation) or the enjoyment of and interest in the activity of painting (i.e., intrinsic motivation) could be in the foreground. Engaging in goal pursuit for tangible, external rewards has been shown to undermine intrinsic motivation (Deci, Koestner, & Ryan, 1999).

At first glance, the definition of intrinsic and extrinsic motivation greatly resembles process and outcome focus. Intrinsic motivation entails a focus on the process, extrinsic motivation a focus on the consequences of attaining a certain outcome. The opposite is not true, however, as the concept of goal focus is mute regarding the underlying reasons for engaging in goal pursuit. For instance, a person might focus on the outcome of goal pursuit (e.g., a beautiful painting) for a goal that was set autonomously and will bear no further consequences such as praise or tangible rewards. Extrinsic motivation implies a concern about the *consequences* of attaining an outcome (e.g., receiving a monetary reward from parents for achieving a good grade), not about the outcome itself. Regarding process focus, a person might focus on the process of goal pursuit (e.g., painting) because she is positively reinforced for doing so (e.g., through teachers' praise for her talent and perseverance). Process focus, then, is not necessarily associated with intrinsic motivation.

Linking Outcome and Process Focus to Performance and Mastery Goal Orientation

Another goal dimension related to goal focus is performance and mastery goal orientation. Dweck (e.g., Dweck & Leggett, 1988) defines performance goal orientation as a focus on how well one is doing (particularly as compared to others), whereas mastery goal orientation represents a focus on learning and mastering a skill. Dweck traces these two types of goal orientation back to beliefs about skills as fixed (i.e., an entity) or malleable (i.e., incremental), respectively. In the first case (entity theory), performance is seen as an indicator of the underlying ability and provides feedback about an unchanging trait. In the latter case (incremental theory), feedback is a means of improving one's skill level. A number of studies in educational settings have shown that setting mastery goals promotes interest in and enjoyment of goal pursuit, but that performance goals are typically associated with a higher level of performance (e.g., Harackiewicz, Barron, Trauer, Carter, & Elliot, 2000; for a review, see Dweck & Molden, 2005). In the area of organizational behavior, however, mastery goals

(in this context often labeled “learning” goals) have been shown to be positively linked to the successful acquisition of new skills, feedback seeking, and performance (e.g., VandeWalle, 2001; VandeWalle, Brown, Cron, & Slocum, 1999).

Seijts and Latham (2005) posit that the adaptiveness of goal focus depends on the goal at hand. If the means and strategies of goal pursuit are not (yet) known or mastered, learning goals should enhance performance because attention is focused on the means of goal pursuit while focusing on performance might actually distract and hinder successful goal pursuit. In a similar vein, and using the terminology of process and outcome focus, Zimmerman and Kitsantas (1997, 1999) point out that, when learning to master a new task, people are more likely to adopt a process focus, defined by these authors as a focus on the acquisition of (strategic) skills (i.e., mastering the various elements and steps of a complex skill such as writing or dart throwing) or, in other words, on the means for achieving a given outcome. Outcome focus, in contrast, presupposes mastery of the different elements of which a complex skill is comprised and denotes a focus on the actual outcome (i.e., performance level). In line with Seijts and Latham (2005), Zimmerman and Kitsantas found that a focus on the acquisition of skills and means (i.e., process focus) is beneficial when learning a new skill whereas outcome focus enhances performance when the means need to be implemented as an integrated whole in the service of goal attainment (Zimmerman & Kitsantas, 1997, 1999). This result can be taken as first evidence for the hypothesis that goal focus and its adaptiveness depend on skill level.

Before we elaborate on the role of age for goal focus, let us summarize the main differences between process and outcome focus.

Main Differences Between Process and Outcome Focus

Table 1 summarizes the main differences between process and outcome goal focus, which will be elaborated below.

Table 1 *Differences Between Process and Outcome Goal Focus*

Process goal focus	Outcome goal focus
Action/means	End state
Subordinate goals (concrete)	Superordinate goals (abstract)
Contextualized	Decontextualized
Provides vague or no standard of comparison	Provides clear standard
Provides guidelines for action	Provides direction, meaning

First, let us point out that the differences highlighted in Table 1 are relative not absolute. Typically, however, actions and the means of goal pursuit are more concrete than outcomes (Carver & Scheier, 1998). Similarly, actions take place in specific situational contexts (e.g., studying for the SAT), whereas outcomes are more decontextualized (e.g., achieving a certain SAT score). Another feature distinguishing outcome and process focus is the clarity of standards of comparison between actual and desired states. Outcome focus is more likely than process focus to provide a clear standard of comparison because outcomes typically entail criteria regarding when they are reached (e.g., arriving at a destination within five hours). By comparison, it is much more difficult to define the standards of comparison for the means of goal pursuit without referring to the outcome (e.g., enjoying a hike is less clearly defined than reaching the destination in a given amount of time). Finally, researchers agree that higher-order, abstract goal representations (i.e., outcome focus) provide direction and meaning in life, whereas lower-order, concrete goal representations (i.e., process focus) provide guidelines for action (e.g., Emmons, 1996; Klinger, 1977; Little, 1989). As Little (1989) pointed out, however, people do not want to know *why* they are doing something but also *what* they should be doing. It seems, then, that neither of the two is in and of itself more adaptive. Instead, as

discussed below, the effects of goal focus are hypothesized to depend on factors related to chronological age.

Age and Goal Focus

As for the development of skills during adulthood, one could argue that skill level is associated with age. In many domains of life, young adults are still in the process of acquiring the means and skills relevant for goal pursuit, such as skills needed in the professional/work domain or in the area of establishing a long-term partnership and family. This might force young adults to focus more closely on the acquisition of skills or the process of goal pursuit (see Zimmermann & Kitsantas, 1997, 1999). Middle-aged and older adults are more likely to have acquired most of the skills necessary to pursue their goals in both the work as well as the social domain and, thus, could be seen as being more likely to focus on the outcome of goal pursuit. Moreover, as Kanfer and Ackerman (2004) point out, skills can also be defined in terms of the balance between investment of resources and payoff. In the context of work-related motivational development during adulthood, they argue that the payoff for resource investment decreases with age, leading younger adults to be more focused on resource investment and older adults on the outcome. Below, we will argue however, that other factors related to chronological age – the availability of resources, future time perspective, goal orientation towards gains or maintenance / avoidance of loss – suggest that, overall, the primary goal focus is expected to shift from the outcome to the process of goal pursuit across adulthood.

Some goals might lend themselves more to a process focus than others. For instance, goals related to an enduring characteristic (e.g., to be a friendly person) or maintaining some state (e.g., to stay healthy) require working constantly on the goal and might therefore be more suitable for a process focus than goals specifying an endpoint (e.g., to pass an exam). Therefore, maintenance goals may be more likely to be associated with a process focus,

whereas goals involving the achievement of new outcomes (i.e., growth) should be more likely to invoke an outcome focus. As has been shown by Ebner et al. (2006), availability of resources is one of the factors determining whether growth or maintenance goals are adopted. When resources are perceived as being limited, people might feel that achieving new outcomes (growth) is less likely and desirable than focusing on the task at hand, namely, the process of goal pursuit. Similarly, as suggested by construal level theory (Trope & Liberman, 2003), goals that are temporally distant are more likely to be represented in an abstract way and in terms of ends, whereas shorter temporal distance of goals should lead to a more concrete representation of the means ("do" goals, according to Carver & Scheier, 1998). Taken together, preference for a certain goal focus might vary by variables such as time perspective (Carstensen, Isaacowitz, & Charles, 1999) and availability of resources (e.g., Freund & Ebner, 2005). Both time perspective and available resources have been shown to be negatively related to chronological age (e.g., Baltes & Smith, 2003; Lang & Carstensen, 2002). Therefore, one could expect an increase in process focus and a decrease in outcome focus during adulthood (see Figure 1).

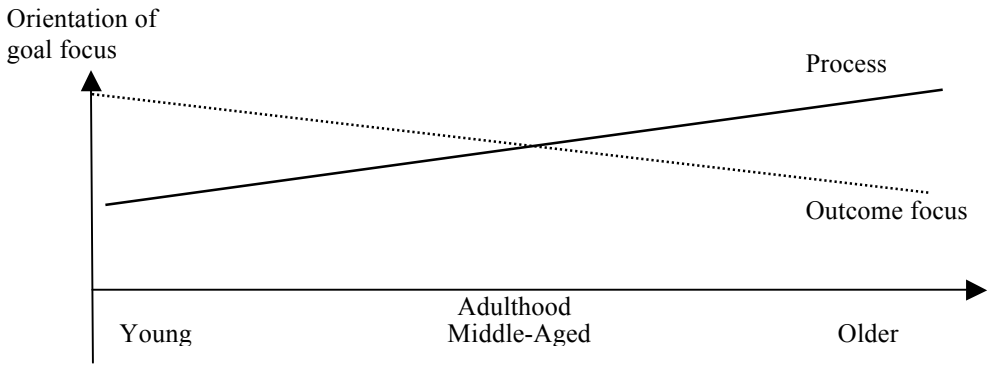

Figure 1. Hypothesized trajectories of process and outcome focus across adulthood.

As pointed out above, the developmental tasks of young adults entail the achievement of growth goals, which have an inherent *outcome*-oriented aspect due to the tangible nature of task

achievement consequences (viz., a diploma, a job, a mate, a child). Thus, young adults may develop a more outcome-oriented approach to task achievement and *outcomes* are likely to become highly salient during young adulthood. Later on, however, adults – especially older adults – goal orientation shifts towards maintaining one's level of functioning and avoiding losses (Ebner et al., 2006; Freund, 2006). Orientation towards maintenance / avoidance of losses implies a constant monitoring of one's actual performance vis-à-vis a progressively declining level of functioning. Thus, orientation towards maintenance and loss-avoidance has an inherent *process*-oriented aspect. Accordingly, older adults may develop a more process-oriented approach to goal achievement. In addition, achieving new outcomes typically takes time. However, when one's future becomes more and more limited, growth goals with their inherently more distant outcomes might be viewed as less applicable to one's own life than maintenance goals with their inherently more immediate nature (as necessitated by constant monitoring). Thus, given that future time perspective decreases with age (Lang & Carstensen, 2002), one might expect older adults to be more process-focused.

Resources and Goal Focus

The importance of achieving gains and accumulating new resources in young adulthood (see above) is likely to result in a focus on achieving certain outcomes. Middle-aged adults might hold an equally strong process and outcome focus because, on the one hand, they are starting to experience a shift in resources toward decline and are, in many areas, at their peak in performance, making achievement of new outcomes less likely. This should lead to a stronger focus on the process of goal pursuit. On the other hand, middle-aged adults typically still experience their resources such as (life-) time and vigor as plentiful, and might therefore still aspire to reach certain outcomes because gains are still possible (Baltes, et al., 1998; Freund & Ebner, 2005; Staudinger et al., 1995). This pattern clearly changes in old age, when resources decline (Baltes & Smith, 2003) and achieving new outcomes becomes less likely and goal

orientation shifts towards maintenance and loss-avoidance. As maintenance goals lend themselves more to process focus than do growth goals, older adults should also be more likely than younger or middle-aged adults to adopt a process focus.

This hypothesis is also consistent with Kanfer's resource model (e.g., Kanfer, 1987; Kanfer & Ackerman, 2004), which proposes that motivation (defined here as effort) depends on the perceived effort-performance function (i.e., the expected level of performance upon investing a certain amount of effort into a task at hand), the performance-utility function (i.e., the consequences of attaining a certain level of performance), and the effort-utility function (i.e., the payoff for investing effort into a task at hand). When resources decrease (e.g., as does fluid intelligence during adulthood), the expected payoff for investing effort declines, so older adults are expected to invest less effort into tasks involving resources on the decline. When resources are plentiful or even increasing (e.g., crystallized intelligence during adulthood), the expected payoff for investing effort increases, so effort will be invested into tasks involving resources that are increasing. Applied to the work domain, Kanfer and Ackerman (2004) propose that "among older workers, work motivation will be less determined by level of performance achievement and, rather, more determined by judgments of how much effort is required for requisite performance and the utility of allocating that effort" (p. 451). This proposition is consistent with the view that older adults' goal focus shifts from being primarily concerned with achieving a specific outcome (here, performance level) and more with the process of goal achievement (i.e., investment of effort).

Time Perspective and Goal Focus

Attempting to achieve certain outcomes requires adopting a future time perspective. Zimbardo and Boyd (1999) even view outcome focus and the ability to postpone immediate gratification in order to attain a goal at some later point in time as part of their concept of future time perspective. In contrast, present orientation is characterized by a more hedonic approach

to life with a focus on more immediate gratification and less concern for consequences that lie in the farther future. Therefore, one could argue that an extended future time perspective is more likely to be associated with outcome focus, whereas shorter future time expansion might be associated with a focus on the process of goal pursuit that is taking place in the present. Investing into the future only makes sense when there is a future in which to reap the fruits of one's efforts. Consistent with this view, in their studies testing socioemotional selectivity theory (SST), Carstensen and her colleagues (e.g., Carstensen, Isaacowitz, & Charles, 1999) consistently show that a limited future time perspective is related to focusing on emotionally meaningful social goals. In contrast, a longer future time perspective is associated with information seeking, which can be seen as an investment in the future. As Fung and Carstensen (2004) put it, "When the future is perceived as open-ended, future-oriented goals weigh most heavily and individuals pursue goals that optimize long-range outcomes" (p. 68), and "when time is perceived as limited, emotionally meaningful goals (…) are pursued because such goals have more immediate payoffs" (p. 68).

In her studies, Carstensen shows that, contrary to younger adults, older people are more likely to restrict their social contacts to close social partners and emotionally meaningful social interactions. It is not old age per se, SST argues, but the shorter future time perspective of older people that is responsible for this shift in social goals. In fact, Lang and Carstensen (2002) show that age is negatively related to future time perspective. Moreover, when experimentally restricting younger adults' time perspective, they orient themselves more towards meaningful interactions with close social partners rather than investing into the future by selecting partners that might provide useful information (for a summary, see Carstensen, Isaacowitz, & Charles, 1999). Research on SST suggests that an extended future time perspective is likely to be associated with a focus on the outcomes of goal pursuit whereas a limited time perspective brings about a focus on the present and, therefore, a more immediate

payoff. With a limited future time perspective, people should be more concerned with the more immediate process of goal pursuit rather than the more distant outcome thereof.

Change vs. Stability Orientation and Goal Focus

In this section, we take a different perspective on gain and maintenance / avoidance of loss goal orientation by shifting the emphasis of this distinction away from gains and losses towards stability and change. From a developmental viewpoint, striving for the achievement of new gains implies an orientation towards *change* (e.g., "I want to become better in Spanish"), whereas striving for maintenance / avoidance of loss implies an orientation towards *stability* (e.g.., "I want to maintain my Spanish at the current level and not get worse"). Different to the distinction of gain vs. maintenance/loss-avoidance orientation, change as well as stability goal orientation might be approach as well as avoidance-motivated. In other words, change and stability goals can be either approach or avoidance oriented (see Table 4). When approaching a change goal, people are oriented towards a future state (e.g., "I want to *become* better") whereas approaching a stability goal implies the wish to maintain an actual state (e.g., "I want to *stay* good"). Similarly, avoiding change is directed at an actual state (e.g., "I do not want to change"), whereas avoiding stability comprises a future state (e.g., "I do not want to *become* different").

Table 2 *Focus on Future vs. Actual State as a Function of Motivational System (Approach vs. Avoidance) and Goal Orientation (Change vs. Stability)*

	Goal Orientation	
Motivational System	Change	Stability
Approach	Future State	Actual State
Avoidance	Actual State	Future State

Goal orientation towards stability or change is theoretically related to goal focus and thereby contributes to the hypothesized age-related differences in process and outcome focus. As we will elaborate below, we posit that a change goal orientation might be associated with a stronger outcome focus and stability goal orientation might be related to a stronger process focus.

One of the main reasons why change and stability goal orientation might contribute to goal focus is that they imply a different discrepancy between the actual and the desired state. The very definition of a change goal is that it entails a significant discrepancy between the actual and the desired state. In contrast, there is no discrepancy between the actual and the desired state in a stability goal – the desired state is to maintain this lack of a discrepancy. Feedback-loop models of goals (Carver & Scheier, 1998; Miller, Galanter, & Pribram, 1960) suggest that, as long as a discrepancy reduction between the actual and desired state is intended and the outcome is not reached, a "tension state" towards the outcome exists, i.e., the cognitive accessibility of outcome-related information might be higher *before* than after goal fulfillment (see Förster, Liberman, & Friedman, 2007). In a change goal orientation, a person attempts at reducing the discrepancy to the outcome ("negative feedback loop", Miller, Galanter & Pribram, 1960). This should render the outcome cognitively more accessible than a stability goal orientation, where the desired outcome state has already been achieved.

Another line of argument for the association of change vs. stability orientation and process vs. outcome goal focus stems from the recently suggested temporal value asymmetry assumptions (Caruso, Gilbert, & Wilson, 2008). Accordingly, people value future events more than equivalent events in the equidistant past. Future outcomes in change goal orientation should therefore have a higher value than outcomes already reached in stability goal orientation. Consequently, change goal orientation should lead to a stronger focus on the outcome than stability goal orientation. Taken together, then, the larger discrepancy of the

actual and desired state in a change goal should lead to a stronger outcome focus when compared to a stability goal. Conversely, stability goals should be associated with a process focus because there is no discrepancy between the desired and the actual state.

Furthermore, change and stability goal orientation might lead to different goal foci due to (1) how resource demanding the pursuit of a goal is, and (2) the frequency of means usage for change and stability goals over time.

Ad (1): Resource Demands

Means might vary in different regards, as making one of them more desirable, e.g., for being less resource demanding than the other. Investing highly resource demanding means might be acceptable if they help achieving a certain goal fast and the investment of the means does not have to be repeated often. This is more likely to be the case in a change as compared to a stability goal that typically requires investment of resources as long as the goal itself exists (e.g., maintaining a certain diet in order to keep one's weight stable). Consequently, as means have to be selected more carefully when pursuing a stability goal, the focus should also be on means rather than the outcome of goal pursuit.

Ad (2): Frequency of Means Usage

Successful stabilization of achieved outcomes is often achieved by repeating already established goal-relevant behavior that helped attaining the now to-be-maintained state. Maintaining a certain state typically requires engaging in goal-relevant behaviors as long as people hold the respective goal. Stability goals (e.g., "I want to maintain my weight") are typically not achieved at one specific point in time and therefore do not render themselves to one-shot goal pursuit. Stability goals, then, are more likely to be pursued for longer periods of time than change goals that typically specify a certain end point when the goal is achieved (e.g., "I want to lose 5 pounds"). Therefore, as goal pursuit stretches over a longer period of time, people are also like to use the means for goal pursuit more often than when they pursue change

goals that are more likely to specify certain end points. Frequency here refers to the absolute number of times means are applied (not to the interval between using the means during a fixed time period). According to semantic memory theories (Collins & Loftus, 1975) or spreading activation models (Bower, 1981) the more recently or frequently a concept (such as a goal orientation) has been used in the past, the more often it is activated, and the more cognitively accessible it is. Therefore, if people use means more often in a stability as compared to a change goal orientation, therefore, means should also be more cognitively accessible.

Adaptiveness of Goal Focus for Change and Stability Goal Orientation

There might be an adaptive correspondence between mental representations of either means or outcomes and change or stability goal orientation. As the pursuit of change and stability goals pose different challenges to goal pursuit, process and outcome focus might be differentially adaptive. In particular, we posit that the challenge of a change goal lies in successfully reducing the discrepancy between the actual and desired state within a certain time (e.g., Carver & Scheier, 1998), which should require more intense and immediate effort mobilization, whereas the challenge of pursuing a stability goal lies in maintaining it potentially endlessly, which should demand adaptive adjustment of means.

Let us first address the challenge of pursuing a change goal, namely to reduce efficiently the discrepancy between the actual and desired state. We maintain that an outcome focus might provide motivational resources helpful when people experience goal pursuit as effortful and demanding. As decision theories propose, outcomes are generally evaluated compared to the costs of attaining them, i.e., the effort invested in the pursuit of a goal (e.g., Kahneman & Tversky, 1979). Given the same costs, the higher (i.e., the more abstract) an outcome is set, the more it is perceived to be worth investing energy in it. Furthermore, Fujita, Trope, Liberman, and Levin-Sagi (2006) demonstrated that focusing on higher-order goals (i.e., outcomes) increases people's motivation and mobilizes efforts for outcome attainment: A focus

on outcomes leads to a preference for delayed outcomes compared to immediate ones, greater physical endurance, more self-control and less positive evaluations of temptations that undermine self-control. Fujita and Han (2009) showed that changes in the evaluation of temptations depend on whether a goal is represented in more concrete or more abstract terms. This, in turn, might explain that an outcome focus can foster self-control when facing temptations. Additionally, Manderlink and Harackiewicz (1984) theorize that a focus on outcomes increases intrinsic motivation. Therefore, an outcome focus should be more likely than a process focus to mobilize motivational resources for optimal outcome attainment. Furthermore, the approach towards the desired outcome and the reduction of the actual-desired state discrepancy is evaluated and experienced as more positive the nearer one gets to the outcome (Carver & Scheier, 1982). In contrast, focusing on a discrepancy where none exists, as in the case of a stability goal, does not provide any further information regarding goal pursuit or potential for experiencing positive emotions.

Turning to stability goals, the main challenge is the length of goal pursuit. For instance, keeping one's weight is not reached at a certain point in time but instead requires constant adherence to a certain eating or exercising regimen. Because of the long-term aspect of stability goal orientation, the means must have the potential to be used for as long as the goal is held. This is not necessarily true for change goals where, once a goal is reached, it is either abandoned (e.g., I want to pass this exam) or translated into a stability goal (e.g., "I want to lose 10 pounds," once achieved, might turn into "I want to keep my weight down"). Because of the longer time frame of a stability goal, people have to pay more attention to how resource-demanding their means are. Taken together, this suggests that, when pursuing a change goal, an outcome focus might be more adaptive, whereas the pursuit of a stability goal should profit more from a process focus.

As was elaborated above, older adults report a stronger orientation towards the maintenance of functioning, whereas younger adults are more oriented towards achieving new gains. Taking a stability vs. change perspective, older adults should be more stability oriented, younger adults more change oriented. If, as we posit, stability orientation is related to a stronger process focus and change orientation to a stronger outcome focus, once again, we would once more predict that younger adults should focus more on the outcome of goal pursuit, whereas older adults should focus more on the process.

Does Process and Outcome Goal Focus Change With Age?

A short-term longitudinal study by Freund, Hennecke, and Riediger (2010) provides first evidence for an age-related shift in primary goal focus. In this study, younger and older exercise beginners' process and outcome focus were assessed using an exercise motivation scale. Outcome focus comprised such items as wanting to lose weight, becoming more physically attractive or improving one's appearance in general. Process focus was operationalized as wanting to have fun, socializing with friends, or making new acquaintances. As expected, younger adults focused more on the outcome of their exercise goal, whereas older adults focused more on the process thereof. Moreover, outcome and process focus were differentially associated with goal-relevant exercise outcomes. Adults with a stronger process focus tended to experience a decrease in the distance to their goal over time and rated it as more attainable and important; they also reported higher goal involvement and satisfaction as compared to adults with an outcome focus. One of the shortcomings of this study is that outcome and process focus were assessed indirectly via the motivation to exercise.

Addressing this shortcoming, in a second study we presented four goals (e.g., to quit smoking) to younger and older adults. Each goal was described by five process-related statements (e.g., throw away cigarettes) and five outcome-related statements (e.g., improve health). Participants were asked to select five out of these ten statements per goal. As

hypothesized, younger but not older adults showed a significant preference for outcome-related descriptors, indicating their stronger outcome orientation. A third study investigated age-related differences in and affective consequences of goal focus. Both, younger and older adults, were to chose between two "thinking exercises", one of them focusing on the desired outcomes of personal goals (i.e., outcome-related exercise), the other one focusing on means to pursue these personal goals (i.e., process-related exercise). Participants who selected the process-related exercise then had to list two successive means by which one could pursue the goal of having a good vacation. Participants who selected the outcome-related exercise had to list two successive desired outcomes of having a good vacation (see also Freitas, Gollwitzer, & Trope, 2004). Again, younger adults showed a preference for the outcome-focused exercise, whereas older adults showed no preference for either type. Affect measures were administered after conducting the exercises. A significant age by goal focus interaction indicated that older adults showed higher positive affect after the process-related exercise. Interestingly, younger adults showed more intense negative affect after conducting the outcome-focused exercise, which they had chosen more often. Even though younger adults appear to prefer an outcome focus, then, they experience more negative affect when adopting an outcome rather than a process focus.

Motivational Phase and Goal Focus

Integrating goal focus into the model of action phases by H. Heckhausen (1989) and the related model of cognitive mind-sets accompanying the different motivational phases (Gollwitzer, 1996; Gollwitzer, Heckhausen, & Steller, 1990), we hypothesize that goal focus changes according to motivational phase.

In brief, H. Heckhausen distinguishes four consecutive phases in the motivational process[1]: In the first, *pre-decisional* phase, people deliberate about pros and cons of different goals, their short- and long-term consequences, as well as their subjective attainability. Once a decision is made, people no longer engage in comparing different options (e.g., Gollwitzer, H. Heckhausen, & Steller, 1990). In the *pre-actional* phase, they focus on formulating binding intentions and concrete action plans that are realized in the *actional* phase. In the final *post-actional* phase goal achievement is evaluated. Note that the sequence of motivational phases is idealized. Throughout the motivational process, people might step back, re-evaluate their goal (i.e., re-entering the pre-decisional phase), the means they employ (i.e., re-entering the pre-actional phase), maybe leading to changes in goal standards or the chosen means. The action phase model by H. Heckhausen proposes (and empirical studies provide evidence) that the proposed sequence is the most likely and prototypical one. Figure 2 summarizes the hypothesized goal focus during the goal process in the action phase model by H. Heckhausen (1989), augmented by the deadline model by J. Heckhausen (1999).

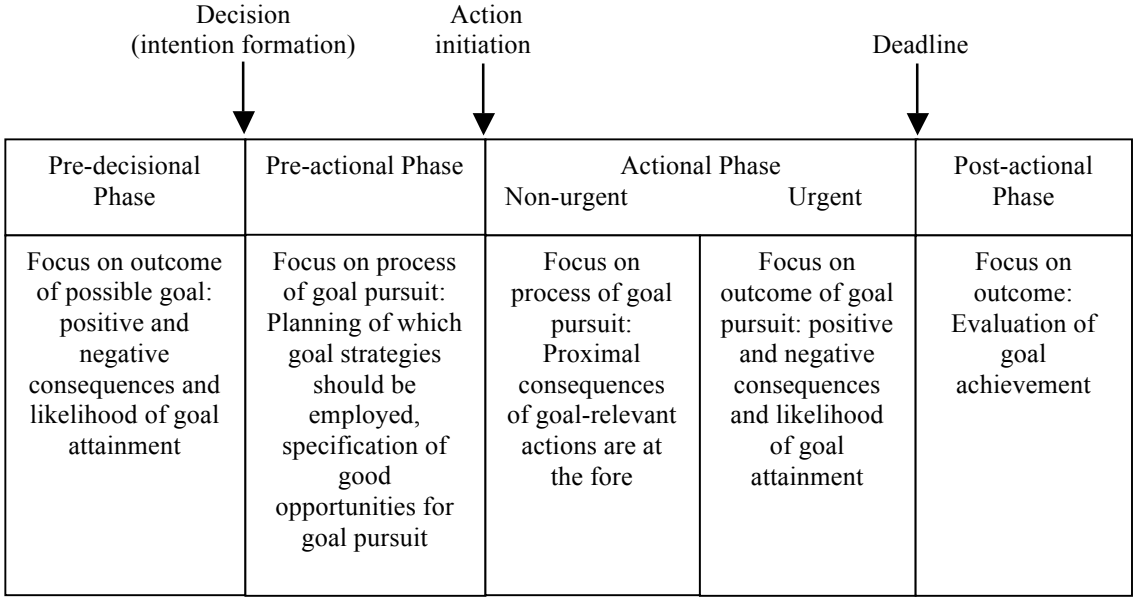

Figure 2. Hypothesized goal focus across motivational phases.

[1] Note that, unlike H. Heckhausen (1989), we use the term "motivational phase" to refer to all phases from setting to attaining (or abandoning) a goal.

If a goal is not externally set (e.g., by teachers, parents, boss), people have to come to a decision if they want to adopt a certain goal or not. During this phase, the *pre-decisional phase*, we propose that people are likely to adopt an outcome focus. This is because during this phase, they deliberate about the advantages and disadvantages of one or more temporally distant outcomes. Weighing consequences of different options is likely to direct attention to abstract, global features of the goal rather than the concrete goal process. At this stage, people think about whether they want or like to attain something in general before engaging in laying out a roadmap as to how to reach the goal. This is not to say, that considerations about whether one believes to have, in principle, good chances of achieving the goal, do not play a role. They clearly do, as research on goal setting shows (for an overview of this literature, see H. Heckhausen, 1989). As the literature in the context of bounded rationality and the use of heuristics for making decisions suggests, however, people do not typically have elaborate lists in mind integrating the various goal-relevant means, weighted by subjective likelihood of attaining each step (Gigerenzer, Todd, & the ABC research group, 1999; see also H. Heckhausen, 1989). Even if all the necessary information were available, such an approach would overburden cognitive capacities and might not even lead to better decisions (Gigerenzer et al., 1999). Therefore, focusing on the outcome and the value attached to the consequences of a potential goal before making a decision seems more likely *and* more adaptive than taking a detailed stock of the necessary means attached to the different outcomes also into account. In fact, H. Heckhausen and Gollwitzer (1987) showed that people focus more on the values of the outcome than on strategies of goal pursuit during the pre-decisional phase.

If a goal is not self-selected but instead externally imposed (and accepted as a goal by the individual), the pre-decisional phase is not relevant and people move directly to the *pre-actional phase* which describes the phase after having committed to a goal and before actually engaging in goal-relevant actions. In the pre-actional phase, people plan the implementation of

intentions as to how, when, and where to start goal-relevant actions and means. If the means of goal pursuit are well established and highly routinized, it is likely that people will immediately proceed to implementing goal-relevant actions, sometimes even in an automatic way, as Bargh and Gollwitzer (1994) posit in their automotive theory of goal pursuit. If, however, the means are not yet known and routinized, the focus is likely to lie on finding out the best way to pursue the goal (see also Zimmerman & Kitsantas, 1997; 1999). In line with this, H. Heckhausen and Gollwitzer (1987) demonstrated that the post-decisional phase is associated with elaboration of plans and strategies of how to implement goal pursuit. Findings on the *implementational mind-set* are highly compatible with the assumption of a predominant process focus during this motivational phase. Moreover, in a number of studies, Gollwitzer and his colleagues (for an overview see Gollwitzer, 1996) showed repeatedly and consistently that clear and strong implementation intentions contribute to goal achievement. Implementation intentions specify goal-related means and actions, situations in which to apply those means, and also the right timing of acting on a given goal. Moreover, implementation intentions have important cognitive effects (i.e., implemental mind-set): They focus attention on goal-relevant information and ward off distractions (including questioning the value of the selected goal), they heighten the accessibility of situational cues allowing goal-related actions (thereby enhancing the likelihood of seizing the right moment and opportunity), and lead to being particularly optimistic about achieving the goal. All of these characteristics of planning enhance the likelihood of actually initiating and completing intended goal-related actions or applying goal-related means (Gollwitzer & Brandstätter, 1997). Taken together, the literature suggests that during the pre-actional phase, people focus on the actual *process* of goal pursuit rather than the outcome.

In the *actional phase*, the primary task is to invest goal-relevant means and engage in goal-relevant actions in the interest of goal achievement. H. Heckhausen and colleagues claim

that a focus on the outcome on a rather abstract level of cognitive representation might be predominant and adaptive during this phase. In contrast, we posit that focusing on the outcome might distract from good opportunities to implement goal-relevant plans and might thereby actually hinder goal achievement. Particularly when long-term goals are pursued that require maintenance of goal-relevant actions over an extended period of time, focusing on the activities related to goal pursuit (rather than the negative discrepancy to a desired outcome) should help maintaining motivation even in the face of hindrances or setbacks (see Kuhl & Beckmann, 1994). This should be the case because, if the very process of goal pursuit is in the foreground, the distance to the outcome becomes less salient. For instance, when the goal is to lose weight and the goal-relevant means is exercising regularly, a lack of weight loss over a certain period of time is less likely to discourage from exercising if the focus is on jogging every morning. If an outcome orientation prevails, the person might give up exercising if no weight reduction is seen within a certain period of time. This might also be why many weight loss programs advise not to get on the scale too often.

In line with this idea, Houser-Marko and Sheldon (2006) found that formulating an existing goal in terms of "self as a doer" (e.g., "jogger" instead of "jogging regularly") lead to higher goal attainment in the domains of academic performance (Study 1) and exercising (Study 2). In contrast, research on positive fantasies, which can be defined as an extreme version of a positive outcome focus, has been shown to have detrimental effects for actual goal pursuit during the actional phase. Oettingen and colleagues have demonstrated repeatedly and in different goal domains (e.g., academic achievement, dieting) that indulging in positive fantasies about the desired outcome seems to undermine actual goal pursuit (see Oettingen & Hagenah, 2005). The authors speculate that the rewarding experience of anticipated goal attainment on an imaginary level might seduce people to fantasize rather than engage in the more laborsome process of the acquisition and investment of goal-relevant means.

The hypothesis of a predominant focus on goal pursuit during the actional phase is also in line with research on automatic goal pursuit. According to the automotive model by Bargh and Gollwitzer (1994), the repeated activation of a goal in a certain situation leads to an association of the respective goal and situational cues. Such situational features can then automatically trigger goal-relevant actions without being consciously aware of the respective goal (Bargh, & Ferguson, 2000). This suggests that, during the actional phase, there is not even conscious awareness of the outcome in order to pursue a goal. It might even happen that – temporarily or permanently – the process itself takes over as the goal and the outcome is either regarded as relatively unimportant or even abandoned as irrelevant (e.g., jogging every morning for 45 minutes becomes a goal and techniques are acquired to improve running performance, whereas losing weight might be seen as nice side-effect of jogging but no longer as the goal). As these examples show, means and ends can change their status during the motivational process (see Kruglanski, 1996). Means sometimes become outcomes. Attention then shifts to the subordinate means to achieve the new goal (formerly known as means).

A different situation arises when a (self-set or imposed) deadline is approaching (J. Heckhausen, 1999). In this case the outcome will again become more salient. A deadline (e.g., losing 3 pounds until the night of the high school prom a week from now) revives the importance of the outcome and decreases the importance of the valence of the process. In such cases, the most effective (and not necessarily the most enjoyable) way of attaining one's goal needs to be identified and implemented so as to reach it in time. Closely monitoring the distance to an outcome becomes adaptive and adjusting means of goal pursuit accordingly is required (e.g., Schmitz & Wiese, 1999).

If the means for achieving a goal are not positively valued, even if the outcome is, people are tempted to procrastinate and not engage in goal-relevant activities. In this case, a deadline and the perceived negative consequences of missing it (i.e., not achieving the

outcome) serves as an incentive to get to work. The valence of the more abstract outcome representation (i.e., the positive valence of achieving the outcome, or the negative valence of failure) is helpful for overriding the negative valence of the concrete goal-relevant means. In fact, research suggests that deadlines increase performance and goal attainment and, moreover, that people even self-impose binding deadlines to counteract procrastination (e.g., Ariely & Wertenbroch, 2002). Thus, people might use deadlines to induce a shift from process to outcome focus, thereby motivating themselves to strive for the positively valued goal instead of focusing on negative aspects of goal pursuit. Note, that not only achievement-related goals can have such deadlines but they can be applied to other life domains as well. An example of a (external) developmental deadline in the family domain is menopause for reproduction in women.

Adopting an outcome goal when a deadline is looming might, on the one hand, help to mobilize increased efforts of goal pursuit and attain a goal within a certain time frame. On the other hand, however, outcome focus might also hinder flexible adjustment of means and emphasize the importance of investing maximum effort over efficient use of goal pursuit strategies (Schmitz & Wiese, 1999). Hence, if a deadline is introduced too early in the motivational process, i.e., when the most adaptive means or strategies of pursuing the goal are not yet established, goal attainment might come at a relatively high cost or people might not live up to their optimal performance level (see also Ariely & Wertenbroch, 2002). In cases where no deadline is set people are expected not to undergo a shift from process to outcome focus during goal pursuit. The same holds true for goals consisting of a state to be reached and maintained (e.g., “I want to be happy.”) rather than an endpoint (e.g., “I want to get married.”). State goals do not have clear endpoints but instead stretch over an extended period of time. As continued engagement in goal pursuit is needed for such goals, they should be generally more conducive to process focus. This contrasts with goals that specify a specific outcome that can

be reached at a certain point in time. Upon reaching such goals – or after deciding to give it up (e.g., because a deadline has passed) – people enter the post-actional phase, in which they evaluate the means and the degree to which they reached the outcome. If the goal will have to be reached again (e.g., taking an exam in school), it is likely that people are motivated to evaluate the quality of the means in order to be able to optimize goal pursuit in the next round (i.e., maintain a focus on processes for some time). With increasing temporal distance, however, people will focus primarily on the outcome (Trope & Liberman, 2003).

Taken together, goal focus is proposed to change relative salience depending on motivational phase. During the pre-decisional and, again, when urgency in attaining the goal is experienced, outcome focus should be predominant. During the pre-actional and non-urgent actional phase, process focus is expected to be more salient.

Consequences of Goal Focus After Failure

After having discussed antecedents of goal focus related to age, resources, time perspective, goal orientation and motivational phase, we now turn to the *consequences* of goal focus when people have to cope with failure.

Previous research on the consequences of goal focus has shown that mentally simulating the process of goal pursuit (e.g., studying for an exam) is more beneficial than mentally simulating its attainment (e.g., receiving a good grade; Pham & Taylor, 1999; Taylor, Pham, Rivkin, & Armor, 1998). However, not much is known about the *underlying mechanisms* that render process or outcome focus more adaptive. We propose that one mechanism might be the reaction to failures and setbacks that might depend on the goal focus. More specifically, we put forth that a process focus is more beneficial because it fosters adaptive affective and behavioral reactions in the event of failure.

There are many typical situations in which goal pursuit is hampered by setbacks or failure: Dieters are frustrated when their weight goes up instead of down, students fail to pass

their exams, and sportsmen do not win a competition. As setbacks and failures are a major threat to future persistence and subjective well-being (Carver & Scheier, 1990; Pomerantz, Saxon, & Oishi, 2000), psychological research has long been interested in how people cope with them: Under which conditions is a person persistent and substitutes their means of goal pursuit? When will someone give up his/her goal and decide to head for other desirable outcomes instead? One prominent determinant of affective and behavioral consequences of failure is attribution to internal or external, stable or instable, global or unspecific causes (Abramson, Seligman, & Taesdale, 1978). We argue that goal focus is another important determinant of affective and behavioral reactions to failure as it might influence whether the inappropriate implementation of means or the failed accomplishment of desired outcomes are in the foreground of failure identification.

Framing Failure as Means vs. Outcome-Related

Feedback is essential to evaluate progress towards a desired outcome (e.g., Carver & Scheier, 1981, 1982). Sometimes such feedback can refer explicitly to either the processes of goal pursuit (i.e., failure to implement the right means) or the outcome states (i.e., failure to achieve a desired result; Earley, Northcraft, Lee, & Lituchy, 1990). We argue that even in the absence of explicit feedback, people can internally frame failure either as failure to implement the right means or as failure to achieve the desired outcome. Whether failure is framed as means- or as outcome-related should partly depend on goal focus. Thinking about means (process focus) should be associated with the cognitive accessibility of these means, whereas thinking about outcomes (outcome focus) should be associated with the cognitive accessibility of these outcomes. Conversely, as highly accessible goals or constructs influence information processing (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Bargh & Pratto, 1986; Förster, Liberman, & Higgins, 2005; Higgins, Bargh, & Lombardi, 1985), a person who primarily focuses on means will be more likely to frame her setbacks as a failure to implement

the necessary or appropriate means of goal pursuit (e.g., "I did not use the right dieting strategies to lose weight."), whereas a person who primarily focuses on the outcome will be more likely to frame her failure as failure to attain desired outcomes ("I did not achieve the weight loss I was hoping for."). In other words: Beaming a flashlight on the means of goal pursuit will more likely also highlight the blocked path, whereas beaming it on the desired outcomes will highlight the blocked outcome. Failure, then, should be framed as process-related in an outcome focus and as outcome-related in an outcome focus.

Behavioral Consequences of Goal Focus After Failure

Framing failure as process-related should have different effects on subsequent behavior than framing failure as outcome-related. After experiencing failure, people usually face different behavioral options: First, means that are thwarted or resulted in failure can be substituted by others (equifinality; Kruglanski, 1996; Kruglanski et al. 2002). Different outcomes can be attained via the same means (multifinality; Kruglanski & Jaffe, 1988; Kruglanski et al., 2002). A person trying to lose weight could, for example, try another diet if s/he realized that the one s/he has tried before does not bring about the desired results. In a process focus, when the means of goal pursuit are identified as problematic and inappropriate, means substitution (i.e. compensation; see Freund & Baltes, 2000, 2002) seems like the self-evident behavioral reaction.

Second, a person can decide to pursue another goal, if s/he perceives the desired outcome as blocked. Switching to another desirable outcome, i.e., disengaging from the goal at hand and selecting a new one (outcome substitution or loss-based selection; Freund & Baltes, 2000, 2002), should be the more straightforward reaction in an outcome focus.

In line with this rationale, some researchers have also argued that so-called "what the hell" cognitions result from identifying behaviors on higher, more abstract levels (Cochran & Tesser, 1996). "What the hell" cognitions typically occur in dieters. After having failed to resist a

temptation (e.g., a piece of cake), they interrupt their dieting for a day or even completely disengage from their weight loss goal. As a consequence, they show disinhibited eating (e.g., more pieces of cake; Polivy & Herman, 1985). This breakdown of self-regulation might be caused by the framing failure as failure to bring about desired outcomes ("I am not successful in reducing my weight"). Perceiving a goal as blocked, might cause people to disengage from it and switch to the tangible goal of eating enjoyment (for a similar argumentation see also Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008). In fact, we have shown that dieters who focus on a more abstract and outcome-related level of their goal (weight loss, improving their appearance, health, and well-being) show more disinhibited eating after failure than dieters who focus on a more concrete process-related level (the way they diet, persist, resist temptations, and change their eating behavior; Hennecke & Freund, in revision). In addition, a recent study by Burnette (2010) has shown that dieters who might tend to attribute failure to the outcome of dieting, as they believe body weight to be fixed (entity theorists) rather than malleable by the use of appropriate means (incremental theorists) report less persistence following setbacks. Moreover, findings of our own self-report study (Hennecke & Freund, in revision) also supported the predicted link between goal focus and a preference for means substitution versus loss-based selection after failure in other goal domains. Participants were asked to name two personal goals and indicate how much they think about the means of goal pursuit (process focus) and about the desired outcomes (outcome focus). As expected, process focus was strongly positively related to means substitution as opposed to loss-based selection. Outcome focus was slightly negatively related to means substitution; hence, it had a positive impact on the loss-based selection of new outcomes after failure.

Affective Consequences of Goal Focus After Failure

What are the affective consequences of process and outcome focus when people encounter failure? According to Carver and Scheier (e.g., 1981), feelings arise as a

consequence of an automatic feedback process. The feedback process continually checks how well one's actions reduce the discrepancy between the actual and a desired state. If goal progress is below a criterion that refers to an acceptable rate of discrepancy reduction, negative affect arises. If goal progress exceeds the criterion, positive affect arises. If it is identical with the criterion, no affect arises (Carver, 2004). Failure of goal pursuit can be defined as a progress rate below this criterion or even stagnation. Accordingly, failure elicits negative affect (see also Hsee & Abelson, 1991). We propose that, especially when goals are difficult to attain and goal pursuit is hampered by setbacks, focusing on and valuing primarily the outcome has negative consequences as it makes the discrepancy between the actual and the desired state more salient.

A second explanation for the detrimental effects of outcome focus on affective well-being is based on the hierarchic organization of goals and goal-directed behavior (e.g., Carver & Scheier, 1982, 1990; Emmons, 1996; Vallacher & Wegner, 1985). Means are often referred to as subgoals that serve the attainment of more abstract, superordinate goals, the respective outcomes. As goals that are placed higher in a personal goal hierarchy are more important and central to the self (Austin & Vancouver, 1996; Boden, 1973), outcomes, by definition, should be more valuable than their respective subgoals or means, they might even be valuable only to the extent that the serve a desired outcome. Self-regulation is required when people engage in activities that are not intrinsically motivated or positively valued in and of themselves (e.g., eating low-caloric food instead of tasty but high-caloric food) but instead represent means in the service of pursuing higher-order goals (e.g., becoming more attractive). If means of goal achievement come to bear intrinsic value (e.g., if someone joins a gym to lose weight and experiences exercising as fun), the former means might change their status to a desired outcome (e.g., wanting to have the fun experience of exercising).

However, the opposite effect can come about when intrinsically rewarding activities become means of achieving extrinsic rewards. The vast literature on the detrimental effects of extrinsic rewards on intrinsic motivation demonstrates that activities can lose their intrinsic appeal if they are tied to extrinsic rewards (Deci et al., 1999; Lepper, Greene, & Nisbett, 1973). Moreover, Newman and Taylor (1992) have demonstrated the relatively lower value of means as compared to outcomes in a study with children who were given a snack as a reward for consuming another snack. Independent of prior ratings of how much children liked the snacks, they ended up liking the snack that was given as a reward for consuming another snack more than the "means-snacks," even though the position of the respective snack in the goal system was assigned arbitrarily.

Martin and Tesser (1989) also assume that the higher a goal in the hierarchy, the more likely it is that a threat to it will elicit rumination, the tendency to carry negative thoughts and feelings after being exposed to unpleasant events. Taken together, as a means is subordinate to its desired outcome, a threat to a means should be less severe than a threat to an outcome. Houser-Marko and Sheldon (2008) have supported this hypothesis when showing that failure feedback has stronger negative effects on mood when it is related to the process (in their terms: primary goal level) as compared to the outcome (in their terms: sub-goal level). Moreover, Emmons (1992) demonstrated that people who focus on concrete goals show less depressive symptoms than people whose goals are rather abstract. Our own research supports our assumptions as well: We have found that framing failure experience during a low-calorie diet as failure to attain desired outcomes was related to significantly lower levels of affective well-being (Hennecke & Freund, in revision).

In addition to these direct effects of goal focus on affect, an indirect effect might result from the behavioral outcomes of each focus. When goals are higher in the goal hierarchy than their subordinate means, disengaging from a goal to switch to another (outcome substitution or

loss-based selection) should impede affective well-being stronger than disengaging from a means and switching to another (means substitution). In fact, we have found that means substitution (as opposed to loss-based selection) is positively related to affective well-being (Hennecke & Freund, in revision).

In sum, then, a process focus might be generally more adaptive after failure because it should lead to failure framing that refer to the means rather than to the desired outcomes of goal pursuit. This, in turn, should foster the substituting of means rather than the loss-based selection of a new outcome. Finally, focusing on means has positive effects on affective reactions to failure, whereas focusing on the outcome should make the discrepancy between the actual and the desired state even more salient.

Conclusion

Goals have wonderful qualities: They motivate behavior, help us organize behavior into action sequences over time and situations, and thus provide our lives with direction and meaning. Although we wholeheartedly agree with this assessment, we would like to distinguish at least two goal dimensions that modulate the adaptiveness of goals. Depending on the availability of resources, it might be better to orient one's goals towards gains, maintenance, or the avoidance of loss. Goal orientation, in turn, might affect goal focus on the process or the outcome of goal pursuit. We argued that a gain (change) orientation is likely to be related to an outcome focus, whereas maintenance (stability) orientation is likely to be related to a process focus. Moreover, we elaborated that the motivational phase might influence the goal focus (during the predecisional phase and close to a deadline, an outcome focus is more likely to occur, whereas during the actional phase a process focus should prevail). Importantly, regarding the consequences of goal focus, we argued that process focus might lead to higher persistence and higher affective well-being when people encounter difficulties during goal pursuit. Research on goal focus is just at the beginning of empirically testing these

hypotheses. Initial results, however, are largely supportive of the ideas presented here. Future research will have to prove the incremental validity of goal focus over other constructs such as intrinsic and extrinsic motivation.

Part IV: GOAL ORIENTATION AND PROCESS VS. OUTCOME FOCUS

BRIEF REPORT

Part IV:

Means or Outcomes?

Goal Orientation Predicts Process and Outcome Focus

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Abstract

Previous research has demonstrated that the representation of goals primarily in terms of means (process focus) compared to outcomes of goal pursuit (outcome focus) increases across the lifespan. Nothing is known, however, about the processes underlying this age-related difference. The current study investigates age-related differences in growth and maintenance orientation as one of the factors contributing to age-related differences in goal focus. A self-report study (N = 123, age range: 18 – 82 years, M = 48.59) presents first evidence that process focus is predicted by maintenance goal orientation, whereas outcome focus is predicted by growth orientation. Moreover, maintenance goal orientation mediates the positive association of age and process focus. Results are discussed taking a functional perspective of the role of goal orientation in age-related differences in goal focus.

Keywords: Goal orientation, motivation, goal focus

Part IV: Means or Outcomes? Goal Orientation Predicts Process and Outcome Focus

Goals can be defined as a cognitive representation linking certain means (or actions) with desired outcomes. People differ in how much they focus on the means (process focus) or on the outcomes (outcome focus; Freund, Hennecke, & Mustafić, in press; Zimmerman & Kitsantas, 1997). For instance, when pursuing the goal to exercise regularly, people can focus primarily on the means (e.g., going jogging every morning) or on the outcome (e.g., losing weight). Which goal focus people adopt appears to have important consequences for goal achievement and subjective well-being (for an overview see Freund et al., in press). For instance, in a longitudinal study on the goal to start regular physical exercise, process focus was related to higher goal satisfaction and goal adherence over time (Freund, Hennecke, & Riediger, 2011). Importantly, process and outcome focus differ by age. Previous research has shown that process focus increases across the lifespan: Freund et al. (2011) found in three studies that younger adults focus more on the outcomes of goal pursuit than older adults, and that a process focus becomes more dominant in older adults.

One of the open questions in this research concerns the processes underlying the shift in focusing in either means or outcomes of goal pursuit across adulthood. The current research focuses on goal orientation as one of the possible processes. More specifically, the present study investigates whether goal orientation towards growth and maintenance mediates the representation of goals, primarily in terms of their means (process focus) or their outcomes (outcome focus).

Across the life span, the ratio of gains to losses in resources becomes increasingly negative (Baltes, Lindenberger, & Staudinger, 2006). There is high social consensus about this shift (Heckhausen, Dixon, & Baltes, 1986), which is also reflected in an increase in the orientation of personal goals towards maintenance and the avoidance of losses across adulthood (Ebner, Freund, & Baltes, 2006). In this paper, we argue that age-related differences in goal

orientation towards gains and (the avoidance of) losses or maintenance is one of the factors contributing to age-related differences in goal focus on the process or outcome of goal pursuit.

As elaborated by Freund et al. (in press), goals oriented towards maintenance have no clear end point and, therefore, might render themselves to focusing on the means rather than the outcome of goal pursuit. Wanting to maintain a certain state (e.g., one's level of cognitive or physical functioning) requires working continuously on the goal because, once stopped, the feared change—most likely a decline or loss in functioning—might take place. Hence, maintenance goals may be more likely to be associated with focusing on the means of the continued goal pursuit rather than on the outcome. Moreover, maintenance goals are temporally and psychologically very close (i.e., the desired state is already achieved and needs to be continued into the future), which, according to construal level theory (Trope & Liberman, 2003), should be associated with a more concrete representation of the means—"do" goals, according to Carver and Scheier (1998).

In contrast, goals oriented towards change (i.e., growth goals, typically specify the achievement of new outcomes, for example, to get a paper published) that might draw attention to the outcome. Further, growth goals specifying a desired outcome in the future are more distant and, according to construal level theory, likely to be represented in an abstract way and in terms of ends. Taken together, we expect that differences in goal orientation towards growth vs. maintenance to mediate the relationship between age and focus on the process or the outcome of goal pursuit.

Methods

Procedure

Participants were recruited through an advertisement in a local newspaper. They were invited to the Life-Management laboratory at the University of Zurich to fill out a self-report questionnaire. The sessions took place in groups of up to 20 participants. After providing

informed consent, participants filled out a short demographic questionnaire and several questionnaires related to their personal goals as well as various other constructs that are not related to the current paper. The sessions lasted about an hour. At the end of the session, participants were fully debriefed and reimbursed with 20 CHF (15 USD).

Sample

The sample was comprised of $N = 153$ adults (18 to 82 years, $M = 51.01$, $SD = 17.45$; 67% female). Regarding education, 39% of the participants had completed obligatory or high school, 11% had completed an apprenticeship, crafts master school was completed by 20%, university of applied sciences degree by 11%, and 19% had an university degree.

Goal Variables

Goals. First, participants were introduced to the term *personal goals* as states individuals want to achieve, avoid, or maintain. They were then asked to list three personal goals in each of the life-domains of social relations, continued education, health, hobbies/leisure.

Growth and maintenance orientation. Following a similar procedure used by Ebner et al., (2006), participants rated each of their personal goals regarding the degree to which they aimed at achieving gains (growth goal orientation) or maintaining a current status quo (maintenance goal orientation) on a scale ranging from 0 (*not at all*) to 6 (*very much*). We calculated the mean score across the three goals as an indicator of general growth and maintenance goal orientation ($M_{\text{Growth}} = 4.83$; $SD = .99$; $M_{\text{Maintenance}} = 4.47$; $SD = 1.28$).

Process and outcome focus. Process and outcome focus were assessed on a scale ranging from 0 (*not at all*) to 6 (*very much*) for each goal ("How much priority has the *pursuit* of this goal to you?" for process focus; "How much priority has the *attainment* of this goal for you?" for outcome focus). We calculated the mean of the three process and outcome items,

respectively, across the three goals as an indicator of process and outcome focus ($M_{Process}$ = 4.30; SD = 1.04; $M_{Outcome}$ = 4.31; SD = 1.07).

Results

Using multiple regression analyses and mediation analyses (Baron & Kenny, 1986; Hayes & Preacher, 2011), we regressed process and outcome focus on age and goal orientation. As controlling for educational status and gender did not change the results, we report the effects without these control variables.

Replicating previous research, age was positively associated with maintenance orientation (β = .31, $t(151) = 4.08$, $p < .001$, $R^2 = .31^{**}$). However, contrary to our expectations, age was not related to growth orientation (β = .05, $t(151) = .62$, $p = .53$). Regarding goal focus, age was significantly related to process focus (β = .20, $t(150) = 2.49$, p = .05, $R^2 = .04^{*}$), but not significantly to outcome focus (β = .14, $t(151) = 1.72$, $p = .08$ $R^2 = .02$).

Confirming our assumptions, maintenance goal orientation predicted goal focus significantly (β = .44, $t(150) = 6.01$, $p < .001$, $R^2 = .19^{**}$), indicating that individuals who pursue maintenance goals are more likely to report that they focus on the means when pursuing their personal goals. Testing the hypothesized mediation, including maintenance orientation in the relationship between age and process focus decreased the association of age and process focus (β = .07, $t(150) = .89$ $p = .37$, $R^2 = .19^{**}$). A bootstrap analysis with m = 1000 samples revealed a significant indirect effect, $CI_{95-} = 0.0034$, $CI_{95+} = 0.014$, indicating that maintenance orientation mediates the association between age and process focus.

Again confirming our hypothesis, growth orientation was significantly associated with a focus on outcomes (β = .57, $t(151) = 8.49$, $p < .001$, $R^2 = .32^{**}$). As outcome focus was not significantly associated with age, no meditational analyses were conducted. Figure 6 illustrates the associations between age, goal orientation, and goal focus.

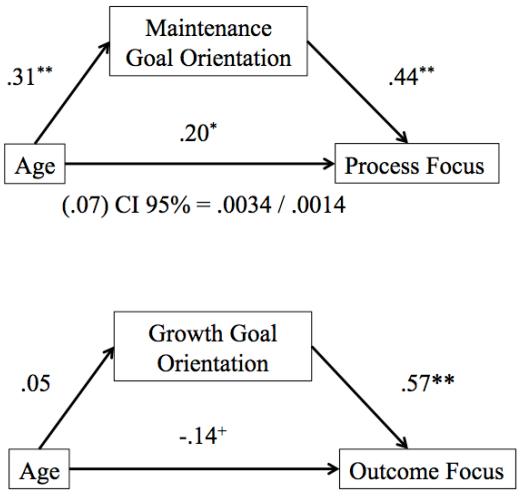


Figure 6. Mediation of the association between age and process focus through maintenance goal orientation (standardized regression coefficients).

Discussion

The current study provides first evidence that age-related differences in focusing on the means of goal-pursuit are mediated by maintenance orientation. Moreover, as predicted, growth orientation was associated with focusing on the outcome of goal pursuit. Contrary to expectations, however, outcome focus was unrelated to age in the current study.

According to the current study, growth goals focus attention on the outcome, whereas maintenance goals focus attention on the process of goal pursuit. These results support construal level theory (Trope & Liberman, 2003), suggesting that goals that imply a closer distance from the actual to the desired state (i.e., maintenance goals) are represented very concretely in terms of the means of goal pursuit. In contrast, goals that involve a larger distance (i.e., growth goals) are represented in a more abstract way in terms of the outcomes of goal pursuit.

Taking a functional perspective, higher adoption of maintenance goals that focuses attention on means might be adaptive for older adults. Resource losses in older adulthood might lead to the perception that "achieving new outcomes (growth) is less likely and desirable

than focusing on the task at hand, namely, the process of goal pursuit." (Freund et al., in press, p. 18). By focusing on the means of maintenance goals, older adults might derive more satisfaction out of the pursuit of long-term goals rather than focusing on the negative discrepancy of the actual and the desired state, as would be the case for a growth goal and an outcome focus. Future research needs to investigate the role of the availability of resources for the adoption and function of goal orientation and goal focus.

One of the limitations of the current study is that it relies on self-report data. Building on the current results, future studies could experimentally induce growth vs. maintenance orientation and measure subsequent goal focus and its adaptiveness for goal achievement and subjective well-being. This would also address another shortcoming of this first study on the relation between goal focus and goal orientation, namely that due to the correlational nature of the design, results cannot be interpreted as implying a specific causal direction. From an associative-network perspective (e.g., Bower, 1981), the activation of a specific goal focus might evoke a specific goal orientation just as goal orientation might lead to the activation of a specific goal focus. Finally, as is always true for cross-sectional studies spanning the adult life span, age and cohort effects are confounded (Baltes, 1968). Unfortunately, as much as longitudinal or cohort-sequential designs are desirable, they would take up many years to capture the age-range that was included in this study.

The current study was aimed at addressing the question of the factors underlying age-related differences in goal focus. Bridging the gap between two goal constructs, goal orientation towards growth or maintenance and goal focus on the means or the outcome (Freund et al., in press), results confirm theoretical assumptions that process focus is related to maintenance orientation, whereas outcome focus is associated with growth orientation. Moreover, older adults' stronger focus on the means of goal pursuit might be due to their adoption of maintenance goals. This might be functional when age-related losses in resources

increase the importance of maintaining functioning and focusing on the respective means rather than keeping an eye on the unlikely outcome of growth goals.

Overall Discussion

This thesis showed that as people grow older, their conceptual frameworks for evaluating developmental outcomes change. Thus, with increasing age, people start to evaluate stability more positively. This age difference in evaluation is likely to emerge as individuals start to compare stability against general developmental loss expectations across adulthood. Additionally, this thesis proposed that with increasing age, achieving stability and preventing loss are more likely associated with a forecasted increase in resource expenditure and, therefore, evaluated more positively. Finally, the findings in this thesis demonstrated that changes in evaluations of stability are likely to affect age differences in goal-related information processing. Table 1 summarizes the main results of the four parts of this thesis.

Part I tested age differences in developmental conceptions as the reference framework of age-differential evaluations. Part II demonstrated age differences in evaluations of developmental gains, stability, and losses using explicit and implicit quasi-experimental paradigms. Finally, Parts III and IV proposed a consequence of the evaluations of developmental outcomes in terms of goal-related information processing. More concretely, it was assumed that pursuing age-related developmental goals would lead to a differential goal-representation in terms of means or outcomes.

Part I: A Differential Role of Developmental Conceptualization of Subjective Well-Being and Decrease in Perceived Multidimensionality Across Adulthood

Part I revealed evidence in accordance with multidirectionality and multidimensionality assumptions that developmental conceptualizations entail representations of gains and losses and are distinct with regard to functional life domains and life stages (Baltes, 1987). Adding to previous studies that incorporated an adjective-based and personality-descriptive approach, the studies in Part I included methodological advances: an online self-report assessment of functionality on a scale ranging from 0 to 100% in four life domains (subjective well-being,

social relations, cognition, and physical functioning) as well as a paper-pencil method based on the "draw a graph" technique (Back & Bourque, 1970).

Further, Part I contained two central findings of this thesis: The first underscores the differential role of developmental conceptions of subjective well-being. More concretely, Part I showed that across age groups least domain-specific losses were forecasted in subjective well-being. Additionally, most developmental disadvantages for subjective well-being were expected for younger adulthood, whereas older age was mainly associated with cognitive and physical declines. This finding supports objective research results regarding the development of subjective well-being across the lifespan (e.g., Kunzmann, 2008). Moreover, developmental conceptualizations of gains in subjective well-being were associated with an increase in perceived controllability of development in all domains assessed. Developmental gain expectations in subjective well-being seem intertwined with increases in perceived controllability. Positive expectations about subjective well-being might have generalized to positive perceptions of controllability and/or vice versa (e.g., Lang & Heckhausen, 2001). Similarly, people might have taken development in subjective well-being as an indicator to assess their controllability over their lives. This process might be highly functional for developmental regulation, as the least losses are expected for subjective well-being. The positive effect of subjective well-being on views of controllability might then substantially affect a wide range of positive outcomes across domains, such as cognitive performance and physical health (Miller & Lachman, 1999; Neupert & Allaire, 2012; Wrosch & Schulz, 2008).

Relatedly, and pointing to the important role of subjective well-being across the lifespan, Horhota, Lineweaver, Ositelu, Summers, and Hertzog (2011) found that across age groups, subjective well-being and physical practices were expected to mitigate memory decline more than internal memory strategies related to the task at hand. Interestingly, whereas younger adults report the use of internal strategies (building networks for memorizing), older adults mainly report using health and well-being practices to counteract decline. This finding

indicates that with increasing age, well-being resources gain in functional importance. There were no age-differential associations of developmental conceptions of subjective well-being and perceived controllability in Part I. Nonetheless, Horhota et al.'s (2011) findings suggest that the importance of the role of subjective well-being as an indicator and means to manage losses counteractively might increase across adulthood and might be an interesting future research avenue.

Table 1 *Summary of the Central Results Presented*

		Main findings	
		Across age groups	Age differences
Part I	Study 1	The least decline is expected in well-being Expected declines in well-being associated with increases in perceived controllability across domains	Older adults expect more decline across all domains
	Study 2	Well-being disadvantages perceived for younger life stages Cognitive and physical disadvantages perceived for older life stages Favorable self-ideal and self-age-group discrepancies in domains of cognition, social relations, and well-being predict life satisfaction and subjective health	Perceived multidimensionality decreases for the older (personal and personal vs. ideal development)
Part II	Study 1	Gains evaluated positively	*Explicitly*: Older adults evaluate stability more positively as well as less negatively and loss less negatively
	Study 2	Resource expenditure salience increases positive evaluations of stability	*Explicitly*: Older adults evaluate stability more positively and stability and loss less negatively *Implicitly*: Older adults show general positivity effect: Older adults evaluate Chinese characters following all trajectories more positively
Part IV	Study 1	Growth goals associated with outcome focus Maintenance goals associated with process focus	Age differences in process focus partly explained by maintenance goals

The second finding of perceptions of multidimensionality suggested that older adults' conceptions of development differ less between domains. This is particularly interesting with regard to subjective well-being as an indicator to increase perceived controllability counteractively or to incorporate well-being practices for older adults. As older adults perceive development between life domains to be more similar, changes in subjective well-being might function as a signal to invest in other life domains' functioning to improve subjective well-being. Moreover, the interdependency of life domains might be reflected not only in the perceptions but also might be functional concerning real behavior and developmental outcomes across domains in older adults compared to younger adults. As this thesis investigated only developmental perceptions, behavioral assumptions could not be tested with the present data but might inspire further research.

Nevertheless, the present thesis revealed that the perceptions of development in different life domains become more generalized across adulthood and the question is why this might be the case. Part I discussed that life experiences might offer older adults more opportunities to perceive the development across life domains as more connected and interrelated. One could additionally argue, however, that older adults are less *motivated* to differentiate. Less differentiation saves time and takes less effort—both of which are resources scarcer for older people. Older adults might have drawn the similar trajectories to save time and complete the task more quickly. This assumption might be true in real-life situations; however, there is no indication to assume that older adults were less motivated to complete the questionnaire in Study 2 than were younger adults. Quite the opposite might be true, as older adults behave in a more social desirable way and persist even longer in experimental tasks across conditions (e.g., Freund, 2006; Soubelet & Salthouse, 2011).

Likewise, one could argue that older adults are less *able* to differentiate, as they might be less capable of retrieving domain-specific information (e.g., Luo & Craik, 2008). Confirming such cognitive accounts, neuropsychological findings suggest that the aging brain

is less specifically recruited in different tasks (dedifferentiation; e.g., Cabeza, 2002; Park et al., 2004; Reuter-Lorenz et al., 2000). Additionally, the ability to constrain and focus on information is impaired as prefrontal cortex function declines (Rossi et al., 2004). These results suggest that the aging brain might have recruited less specific information within the task in Study 2 on aspects that had to be conceptualized. However, as discussed in Part I, Hummert et al. (1994) demonstrated that differentiation is highly context dependent: When it comes to stereotyping, older adults view their subgroups more differentially than younger adults. Hummert et al.'s finding suggests that older adults in Study 2 were at least as able to differentiate as younger adults were. Still, future research using experimental designs is desirable to separate straightforwardly a general decrease in ability to differentiate information from the motivational and cognitive mechanisms leading to the specific effects in decrease of differentiation between developmental conceptualizations.

Part II: When Stability Turns Into Gain: Age Differences in Evaluations of Developmental Outcomes

Building upon Part I, Part II demonstrated age-related changes in the evaluation of stability and loss using an explicit self-report and an implicit affective-misattribution measure (AMP; Payne, Cheng, Govorun, & Stewart, 2005) of positivity and negativity. Older adults found stability to be more positive and less negative and losses less negative compared to middle-aged and younger adults. However, the differences were found only on an explicit and not implicit level.

According to the implicit findings, evaluations of developmental outcomes seem deliberate and not a highly ingrained process. We assumed that comparisons might take place with high efficiency advantages and even without conscious awareness. Comparison standards have to be somewhat available, but individuals do not necessarily have to be aware of these standards (Mussweiler, Rüter, & Epstude, 2004). With time, developmental conceptions might become more ingrained and even automatic. Such automatic processes function with large

efficiency advantages and save cognitive resources (Mussweiler & Epstude, 2009). Therefore, these automatic comparisons might become more relevant with increasing age. However, the AMP results in Part II suggested that evaluations are more likely a deliberate process. Still, the AMP implicit test is not a straightforward test of automaticity (Gawronski, Hofmann, & Wilbur, 2006). Therefore, it might be promising to investigate age-related differences in evaluations of stability using experimental paradigms that capture automatic processes more directly, including, for example, psychophysiological measures, eye tracking, or pupillometry (Bijleveld, Custers, & Aarts, 2009; Laeng, Sirois, & Gredebäck, 2012). Nonetheless, the AMP as an implicit measure has important advantages compared to self-report measures: It captures initial responses to the task and is modified less by other psychological processes. The knowledge structures activated are more likely to be related to the task at hand. Therefore, the AMP results are important complements to the self-report findings presented in Part II.

Additionally, and in contrast to predictions, AMP results revealed a general implicit positivity effect as older adults evaluated more positively all Chinese characters following developmental trajectories. Within specific contexts, older adults are more likely to pay attention to and process positive information than are younger adults (Mather & Carstensen, 2005). However, a general positivity explanation cannot account for the age differences in the explicit findings: Older adults significantly differentiated among all three trajectories when they were evaluated explicitly.

Assessing evaluations explicitly in Study 2 of Part II demonstrated that the evaluations of gains and stability became more similar. The finding suggests not only that older adults perceive stability as a gain but also that the gains might become less attractive with increasing age. As discussed in Part II, the result might reflect a "sour-grape reaction" of older adults. Gains are more and more difficult to achieve with increasing age; therefore, they should be somewhat devalued (Heckhausen & Schulz, 1995). Additionally, older adults might have experienced that acquiring new gains and wanting more in terms of quantity do not necessarily

increase life satisfaction and well-being in the long run (hedonic treadmill; Brickman & Campbell, 1971). Instead, older adults might value involvement in already acquired gains—such as new perspectives on what one has already achieved—as more beneficial. In contrast to pursuing unknown outcomes, appreciating already acquired gains might be similarly rewarding and require less effort.

Remarkably, the implicit as well as explicit results revealed no differences in evaluations of developmental outcomes depending on life domain. This finding indicates that the context specificity and domain differentiality of evaluations is rather low across age groups, although Part I revealed that comparison standards for evaluations are multidimensionally conceptualized. However, to evaluate developmental gains, stability, and losses, the *direction* of conceptualization (gains or losses) seemed to be more relevant than the *degree* of gain and loss expectations within specific life domains. The results of Part I supported the assumption that younger adults expect improvement across all life domains, and compared to these expectations, stability was not evaluated positively. In contrast, once personal prospects decrease and loss expectations increase, the evaluation of stability becomes more positive.

Referring to mechanisms associated with this shift in developmental evaluations, we hypothesized that developmental evaluations are shaped by the comparisons people make (Mussweiler, 2003). We assumed that it is likely that individuals view their personal developmental conceptions as the comparison standard. As one's personal standard is highly accessible and highly elaborated, as well as relevant, it is most likely selected as the comparison standard (Mussweiler, 2003). However, the argument could be made that one's personal comparison standard might be most informative in one context yet not in another. If people were motivated to evaluate their personal developmental stability as a developmental advantage or disadvantage in comparison to others, they might be more likely to recruit others' trajectories to evaluate their own developmental outcomes. That said, the motivation to compare oneself with others was not manipulated in the experiments of Part II. Additionally,

and before measuring the evaluations of stability, we asked participants to draw their personal developmental trajectories in the four life domains to make their personal standard more available. Still, moderators of the selection process of developmental comparison standards (e.g., metacognitions on whether to use available information or not for the comparison processes) might be promising avenues for further research on developmental outcome evaluations.

Similarly, micro-analytical models of evaluative information processing suggest there are subsequent stages when people evaluate objects. That is, evaluation processes might be separated into the encoding and comparison stage of information processing, or more generally speaking in perceptual and judgmental stages (Voss, Rothermund, & Brandtstädter, 2008; Willemsen, Böckenholt, & Johnson, 2011). The presented data could not be used to determine at which stage of evaluative information processing the age differences were most pronounced; however, this thesis was aimed at demonstrating age differences in evaluations rather than age differences in stages of information processing. Still, and in line with previous remarks regarding automaticity and selection of comparison standards, future studies might address whether age differences are already pronounced at an early stage of information processing or whether age differences first emerge on the level of the evaluative stage.

In addressing additional information processing accounts, Payne, Cheng, Govorun, and Stewart (2005) stated that the AMP (used in Part II) combines projective tests with priming research. Although our theoretical account was related solely to comparison assumptions, it is important to note that the findings reported here are associated with the evaluative priming account and show to some degree also evaluative priming effects (Klauer & Musch, 2003; Wentura, 2000). The conscious and unconscious activation of knowledge and affective structures related to developmental trajectories is a precondition and is assumed to be a central part of the conceptual as well as comparison process. However, as addressed in the previous

section on different information processing stages in evaluations, future research might address the specific role of affective priming effects within the evaluation.

Finally, when comparing positive and negative evaluations among age groups, it is necessary to allow for the perspective that differences in positive affective reactions between age groups could be explained solely by brain aging. In fact, there is evidence for structural changes in the brain regions responsible for emotional well-being, emotional control, and emotional responding across the lifespan (for a review, see Samanez-Larkin & Carstensen, 2011). However, the evidence on responsible regions is contradictory because the same brain regions might be involved in positive as well as negative affectivity. Further, there is lack of evidence showing a clear causal relation between specific brain regions and subsequent positive reactions. Additional studies have shown that manipulation of motivation counteracts structural changes; for example, Logan, Sanders, Snyder, Morris, and Buckner (2002) showed that usage of prefrontal regions is enhanced when older adults were instructed to use semantic elaboration of the material. This finding indicates that psychological processes might even outperform neurological structural changes. Moreover, and as discussed previously regarding the positivity effect, a brain aging account cannot explain the differences in explicit evaluations found within older adults. Yet, models of evaluative judgments across the lifespan need to consider a complex interplay of motivational, cognitive, and perceptual/neurological accounts.

Comparison standards and the role of resources. Some limitations of the presented research (such as the cross-sectional designs, highly educated samples, and other more specific limitations regarding particular studies) were already communicated in discussion sections within parts of this thesis. Still, one could argue that a central shortcoming of this thesis is that not all assumptions were tested within a single study design. It would be desirable to have manipulated expectations in one design to test the comparison hypothesis. For example, one could unfold the mechanisms more straightforwardly by showing that older adults evaluate stability more negatively when they expect a positive task outcome and that younger adults

evaluate stability more positively when they expect a negative one. However, due to a lack of specific hypotheses about age differences in such general comparison effects, additional tests probably would not have added further insight than those already established findings in contemporary research (e.g., Mussweiler, 2003).

Addressing further mechanisms involved in age-related changes in evaluations, we tested the additional resource expenditure hypothesis in Part II to explain the effects. Manipulation of the salience of resource expenditure was expected to remove the age differences; the manipulation was successful, as it increased the evaluation of stability across age groups but was not strong enough to diminish age differences in this highly resourceful sample, as indicated by high education levels. Therefore, evidence for the role of resources in age differences in evaluations is still lacking.

There is another possible aspect of evaluating outcomes in a positive or negative way regarding resources that might be incorporated into future studies: From a socioeconomic view, Inglehart and Baker (2000) proposed a scarcity hypothesis in their modernization theory. That is, they suggested that values change according to a scarcity of options. According to this hypothesis, individuals assess the attainability of options with respect to themselves and others. The scarcity estimation of positive outcomes might become more pronounced in older adults because, for example, older adults evaluate self-development and the development of their age group as less advantageous than younger adults (Heckhausen & Brim, 1997). Stability might be assessed as a rare event for older adults and therefore be evaluated more positively. Further studies that induce or assess the perceived attainability of stability might help advance the test for the role of resources in the face of changing evaluations.

It is important to note that it was theoretically assumed that people evaluate stability more positively because they assume it is necessary to invest resources in stability and stability is a scarce resource. However, the association might be reversed, with people evaluating stability more positively and therefore be willing to invest more resources in stability and

perceive stability as scarce and valuable with increasing age. Future experimental studies would be desirable to test the strength of the two explanation directions.

Parts III and IV: Developmental Goals and Goal-Related Information Processing

The ideas and studies presented in Parts III and IV relate to the action-theoretical assumptions of the lifespan theory of selection, optimization, and compensation (SOC; Baltes & Baltes, 1990; Freund & Baltes, 2000). Specifically, they relate to the association between the evaluation of developmental outcomes and developmental regulation via setting and pursuing developmental goals (Freund, 2003, 2007).

First, valuing developmental outcomes might contribute to setting specific goals; that is, valuing stability might lead to adoption of the goals to maintain stability, whereas valuing change might lead to adoption of goals associated with growth. Change and stability goals as knowledge structures, in turn, could affect information processing with regard to preferring information on means for goal pursuit or outcomes for goal attainment. It has already been shown that on the level of goal-related information processing, increasing age is associated with goal representations in terms of means, whereas younger ages are associated with representations in terms of outcomes (Freund et al., 2010). It has also been shown that older adults predominantly pursue maintenance and prevention of loss goals, whereas young adults prefer orientation toward growth (Ebner et al., 2006). To bridge these two previous findings, it was hypothesized that goal orientation mediates the effects of age on goal-related information processing: Change goal orientation was hypothesized to lead toward the representation of goals in terms of *outcomes*, whereas stability goal orientation was expected to result in the representation of goals in terms of *means*. In accordance with these assumptions, we found the main effects of growth (change goals) on outcome focus and maintenance (stability) on process focus. Moreover, we found that maintenance goals mediate the association between age and process focus. Nonetheless, the results are limited in their strength as Part IV was just a single correlational study using one-item measures of the concepts. The possibility of false positive

results and a lack of theoretical argumentation can be a drawback of such short single-study papers (Ledgerwood & Sherman, 2012). Yet, the results in Part IV are theoretically well elaborated in Part III. Moreover, the study in Part IV was aimed as a first demonstration of possible mechanisms in the relation of age and goal focus that might stimulate further research.

The shortcomings of the study, the necessity to conduct further research, and control for goal orientation experimentally were discussed in detail in Part IV. It is still important to note that while it is desirable to conduct experimental research on goals, it is difficult to manipulate stability and change within a task in a short timeframe. Moreover, task selection for experiments is challenging, as tasks need to be somewhat comparable to developmental tasks to result in valid developmental predictions.

Further consequences of evaluations. For future research, age differences in evaluations of developmental outcomes bring forth a wide range of research questions. Pertaining particularly to goals, it would be fruitful to investigate the process of how goals emerge from developmental outcome evaluations. At which goal generation stage do evaluations of stability impact goal choice/goal adoption with increasing age? These questions could be investigated using social cognitive paradigms that capture goal-selection processes.

Additionally, there might be several interesting motivational, cognitive, and behavioral consequences of evaluations. It is likely that the objects being evaluated positively engender positive affect (Clore & Colcombe, 2003). As stability is viewed more positively with increasing age, it is likely that stability engenders positive affective states later in the lifespan. Consequently, information related to stability might be processed more smoothly, more easily, and more quickly in older adults compared to younger ones (Schwarz, in press). Additionally, the positive evaluation of stability might facilitate a biased experience so that information on stability is perceived as truer and more frequent (Schwarz, in press). Thus, such affective and cognitive concequences might facilitate the impact of stability on behavior (Kruglanski et al., 2012). From a broader action-theoretical perspective, the potential behavioral impact of

evaluations is particularly important to investigate because people actively shape their life trajectories through actions and behavior (Brandtstädter, 2006; Lerner & Busch-Rossnagel, 1981). As evaluations could be tied to adoption of goals, evaluations might impact motivation, cognition, and behavior across the lifespan in a way similar to goals. For example, Freund (2006) demonstrated that older adults are more likely to persist longer on a task when the task is framed as a prevention-of-loss task, whereas younger adults persist longer when the task is framed in terms of gains. It would be interesting to test whether outcomes framed as stability would lead to similar behavioral effects. Neumann, Förster, and Strack (2003) also proposed that evaluative processes prepare the organism to act in an approaching or avoidant manner, helping to modify and redirect behavior, specify action parameters, and shape actual behavior. As older adults find stability more positive, they might react to stability in an more approaching and flexible way. Dealing with developmental outcomes in a constructive, flexible manner is proposed to contribute to successful developmental regulation (Brandtstädter & Renner, 1990). Addressing the role of evaluative processes for behavior and developmental regulation might be a fruitful area for future research.

Functionality of Conceptions and Evaluations: Developmental Regulation Across Adulthood

Contrasting and distancing processes against the negative aspects of aging, and assimilative processes focused on the positive aspects were found to protect the adult self. For example, processes such as (a) distancing oneself from one's age group but identifying with the generation (Weiss, 2009); (b) distancing oneself from one's age group (Heckhausen & Brim, 1997) and identifying with ideals (Ryff, 1991); and (c) distancing from unattainable goals and re-engaging in attainable ones (e.g., Wrosch, Scheier, Carver, & Schulz, 2003) have been found to contribute to subjective well-being and self-regulation across the lifespan. Similarly, contrasting stability against losses (and assimilating it toward gains) might be a process that protects subjective well-being and a general positive view of life in the face of loss. More

concretely, to evaluate developmental options, individuals might either assimilate (focus on similarities) or contrast against (focus on differences) the comparison standard (Bless & Schwarz, 2010; Mussweiler, 2003). Part II of this thesis revealed that stability is evaluated more positively across the lifespan. This finding indicates that stability is more likely contrasted against losses. Facing losses and decline might be threatening to people; therefore, contrasting against losses and distancing oneself from losses might be highly beneficial for subjective well-being. Therefore, positive evaluations of stability might mirror an adaptive regulatory strategy.

Similarly, and from the view of the lifespan theory of SOC (Baltes & Baltes, 1990; Baltes, Baltes, Freund, & Lang, 1996; Freund & Baltes, 2000), individuals endorse different strategies to regulate their development with increasing age. For instance, by incorporating expectations of losses into their conceptualizations, individuals lower their aspiration levels. Consequently, people adjust the evaluation and pursuit of developmental outcomes in response to impeding losses (loss-based selection). The first part of this thesis integrated this assumption, showing that individuals adjust their aspiration levels and expectations according to their own age, life domains, and life stages. Part II showed that evaluations of developmental outcomes are adjusted across the lifespan. According to SOC, such adjustment and loss-based selection processes are hypothesized to contribute to maintaining a positive ratio of gains to losses across the lifespan. In this thesis, the findings on the shift in evaluation of stability proposed that people set up their own gains to loss ratio; that is, people construct gains and interpret developmental outcomes as favorable according to the developmental opportunities and constraints they face.

Similarly, the results of the thesis are in line with Heckhausen's theory of control (Heckhausen & Schulz, 1995). Changes in evaluations of developmental outcomes might be interpreted as an internal regulation strategy aligned to protect motivational reserves from depletion in the face of loss (secondary control). After Heckhausen, secondary control

strategies such as re-evaluation mainly assist primary control strategies. Primary control strategies then help individuals deal with external demands and opportunities as well as constraints, enabling individuals to pursue their developmental goals. Therefore, framing stability in a positive way in older adulthood might channel the necessary motivational reserves in support of adaptive goals. More concretely, evaluating stability positively in older age might motivate adoption of stability goals to maintain outcomes that were achieved successfully during young adulthood and middle age, enabling older adults to share these resources with others (Freund & Ebner, 2005; Greve & Bjorklund, 2009). In return, the pursuit of maintenance goals in older adulthood is rewarding in terms of subjective well-being (Ebner, Freund, & Baltes, 2006).

Following Brandtstädter's (2006) model of assimilation, accommodation, and immunization processes, the adjustment of aspiration levels and the positive evaluations of stability reflect an accommodation process across the lifespan. Accommodation processes are theorized to reflect an internal flexible adjustment to changing contextual demands. As contextual demands become less favorable with increasing age, the positive interpretation of ambiguous outcomes, such as stability, can be viewed as an internal flexible adjustment strategy. In response to a negative event, successful self-regulation mechanisms, such as re-evaluation, can buffer the negative effects of losses on subjective well-being (Rothermund & Brandtstädter, 2003). In Part II, we found that implicit positive evaluations age differentially predicted current subjective well-being. In contrast to young adults, middle-aged and older adults' subjective well-being profited from evaluating stability in a positive way. Still, effects of evaluations on subjective well-being need further empirical support: The interaction effects of age and evaluation of stability in Part II were only marginally significant ($p = .07$), the explained variance strongly varied depending on whether subjective well-being or life satisfaction was measured and the positive associations were found only for implicit evaluations.

According to Brandtstädter's (2006) assumptions, however, the buffering effects of evaluations on subjective well-being might be functional primarily when people are dealing with current losses and are counteractively regulating the progressing decline of subjective well-being. Future research using experience sampling and real-time assessments might capture such protecting effects of evaluations on subjective well-being more on time (see Isaacowitz, Toner, & Neupert, 2009 for such a real-time approach). Short-term longitudinal designs during transitions or after significant life events (move to a nursing home, move to another city to study or to work, diagnosis such as diabetes, divorce, or death of a spouse) might capture adjustment processes without the roadblocks of long-term longitudinal studies, which cost time and effort and are problematic with regard to dropouts. Similarly, experimental studies that induce negative mood and measure the regulative potential of evaluations might be useful in testing such associations (e.g., Isaacowitz, Toner, Goren, & Wilson, 2008). However, such experimental designs manipulating mood entail methodological drawbacks such as ethical concerns and lack of comparability to developmental processes.

In accordance with the assumption that adjustment of evaluations might serve current subjective well-being, positive evaluations of stability might fulfill emotional and hedonic goals that older adults pursue (Carstensen, 2006; Fung & Carstensen, 2006; Riediger, Schmiedek, Wagner, & Lindenberger, 2009). Due to their shorter time-perspective, older adults are hypothesized to maximize their subjective well-being, while younger adults tend to show negativity-dominance and contra-hedonic motivation. This negativity bias was proposed to help younger adults gain evolutionary benefit, as negativity motivates younger adults to change and improve while assisting them with survival (Rozin & Royzman, 2001). Such general hedonic vs. contra-hedonic goals cannot explain all the effects found in Part II of this thesis, as, for example, older adults do not view losses more positively than younger adults. However, as gains might be positive and losses might be negative for everyone, there might be an effect of goals on developmental outcomes in between, such as stability, which are more

open to interpretation. Positive evaluations of stability might then be interpreted as means that serve emotional goals across adulthood. However, to test whether the positive evaluation serves goals and represents an emotion-regulatory strategy at all, empirical support including mood as a dependent variable is necessary (Isaacowitz & Blanchard-Fields, 2012).

Conclusion

This dissertation examined age differences in the evaluation of developmental outcomes. First, the findings showed that conceptions of development become more general trajectories of decline with increasing age. Additionally, the findings showed that developmental outcomes are not positive or negative by themselves: Their evaluation shifts across adulthood, most likely due to changes in developmental conceptions. The thesis also presented the first evidence that the pursuit of developmental outcomes impacts goal-related information processing. Finally, this work pointed to the functional importance of evaluating stability positively on maintaining a positive ratio of gains to losses, protecting well-being, and motivational resources.

This dissertation extended the understanding of the complex interplay among developmental conceptions, evaluations, and goal pursuit, and hopefully inspired further work on motivational, emotional, cognitive, as well as behavioral implications of evaluations across the lifespan.

Supplemental Materials

Appendix A

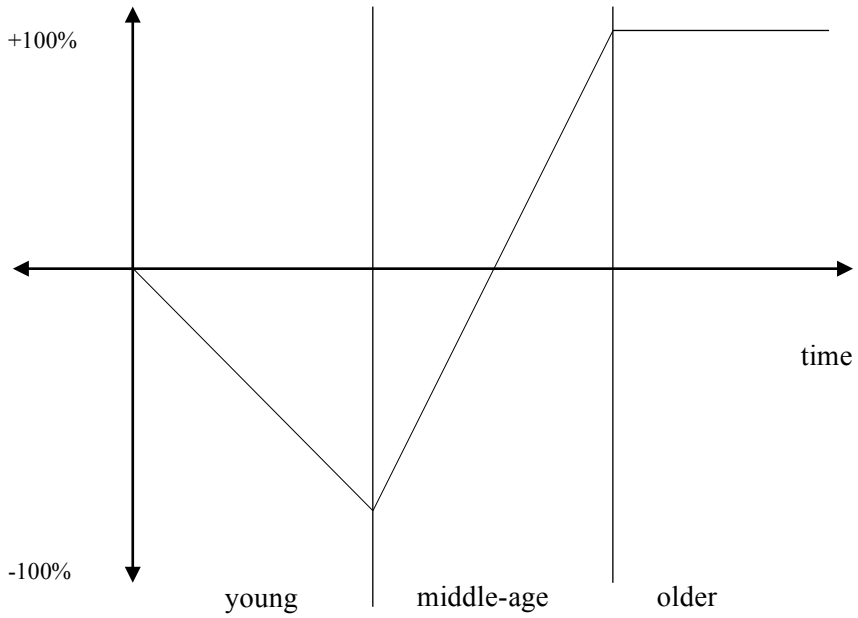
Verbatim Description of the Instructions Used in Study 2

Personal Development

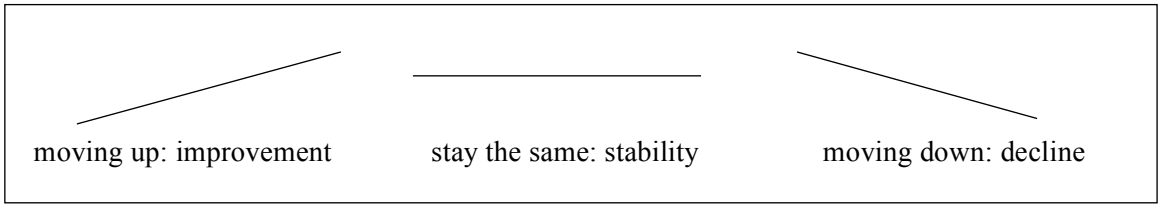
The development of different abilities can **improve**, **decline**, or **stay the same** over time. We can plot how our abilities change over time in a graph. The following example shows how someone's ability to manage time might develop. The graph begins at age 18. Starting there, this ability can either stay the same, improve, or decline.

Example: Ability to manage time

In early adulthood, the ability to manage time might decline. This ability might improve during middle adulthood and then stay on the same level during later adulthood.



The development of the ability to manage time was depicted using the following lines:



On the following pages, please draw lines like these to show your personal development in different areas (namely, cognitive functioning, well-being, physical functioning, and social relationships). We are interested in seeing which direction you draw these lines in. There are no "correct" or "incorrect" drawings.

Your Personal Development

Now please draw a line to show **your personal** development, moving up to show improvement, staying at the same level to show stability, or moving down to show decline. (*A blank axis of abscissas appeared after each description*).

Subjective Well-Being

"Well-being" refers to a general feeling of being content with yourself and your life. What do you think – how has your well-being developed up to now and how will it be in future?

Social Relations

"Social relationships" refer to the quality and quantity of social relationships. What do you think – how have your social relationships developed up to now and how will they be in future? Please draw a line to show your development in this area.

Cognitive Functioning

"Cognitive functioning" refers to abilities like memory and the ability to concentrate. What do you think – how has your cognitive functioning developed up to now and how will it be in future? Please draw a line to show your development in this area.

Physical Functioning

"Physical functioning" refers to abilities like physical endurance, power, and mobility. What do you think – how has your physical functioning developed up to now and how will it be in future? Please draw a line to show your development in this area.

Appendix B

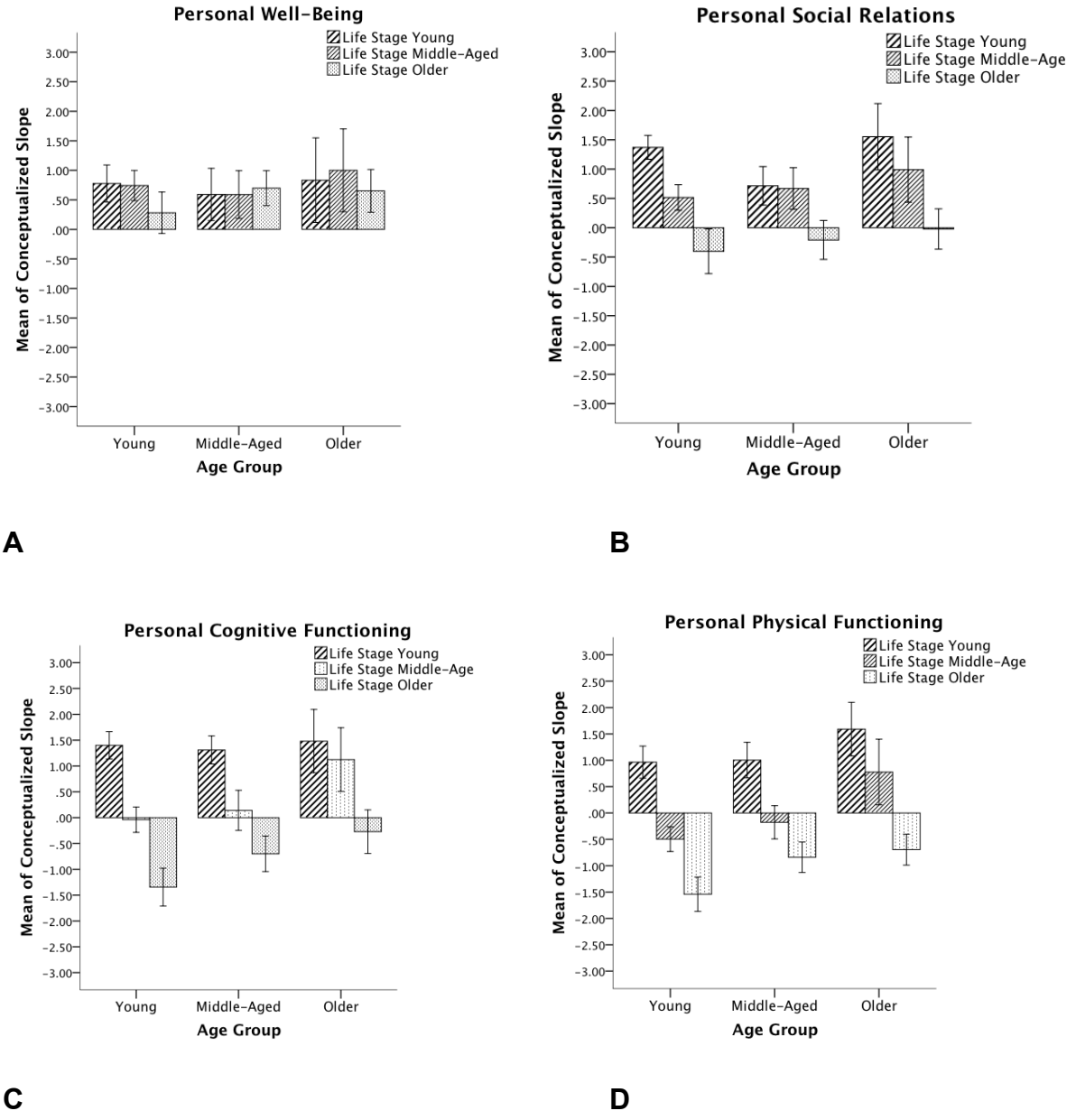
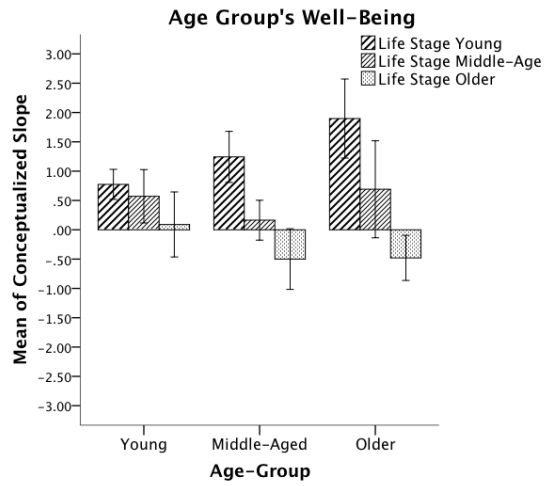
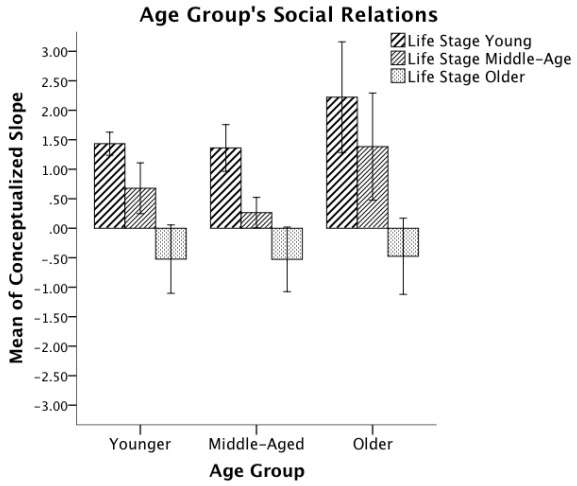


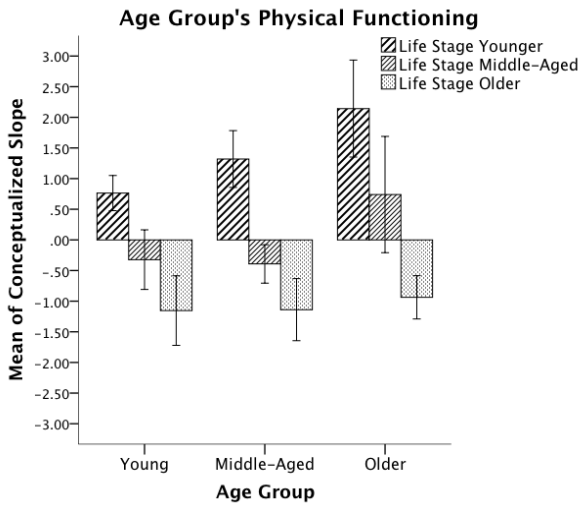
Figure 2. Mean slopes of drawings by three age groups for three life stages in the domains of (A) subjective well-being (B) social relations (C) cognition (D) physical functioning from the *self* perspective. Values above zero indicate that the particular life stage was associated with growth; values below zero indicate an association with decline. Error bars represent confidence intervals.



A



B



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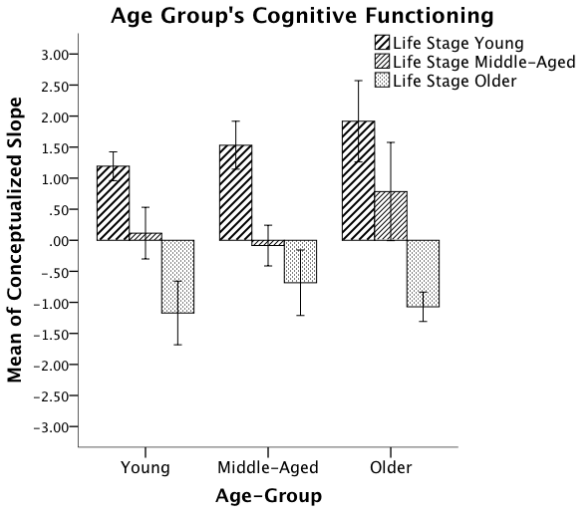


D

Figure 3. Mean slopes of drawings by three age groups for three life stages in the domains of (A) subjective well-being (B) social relations (C) cognition (D) physical functioning from the *one's age group* perspective. Values above zero indicate that the particular life stage was associated with growth; values below zero indicate an association with decline. Error bars represent confidence intervals.

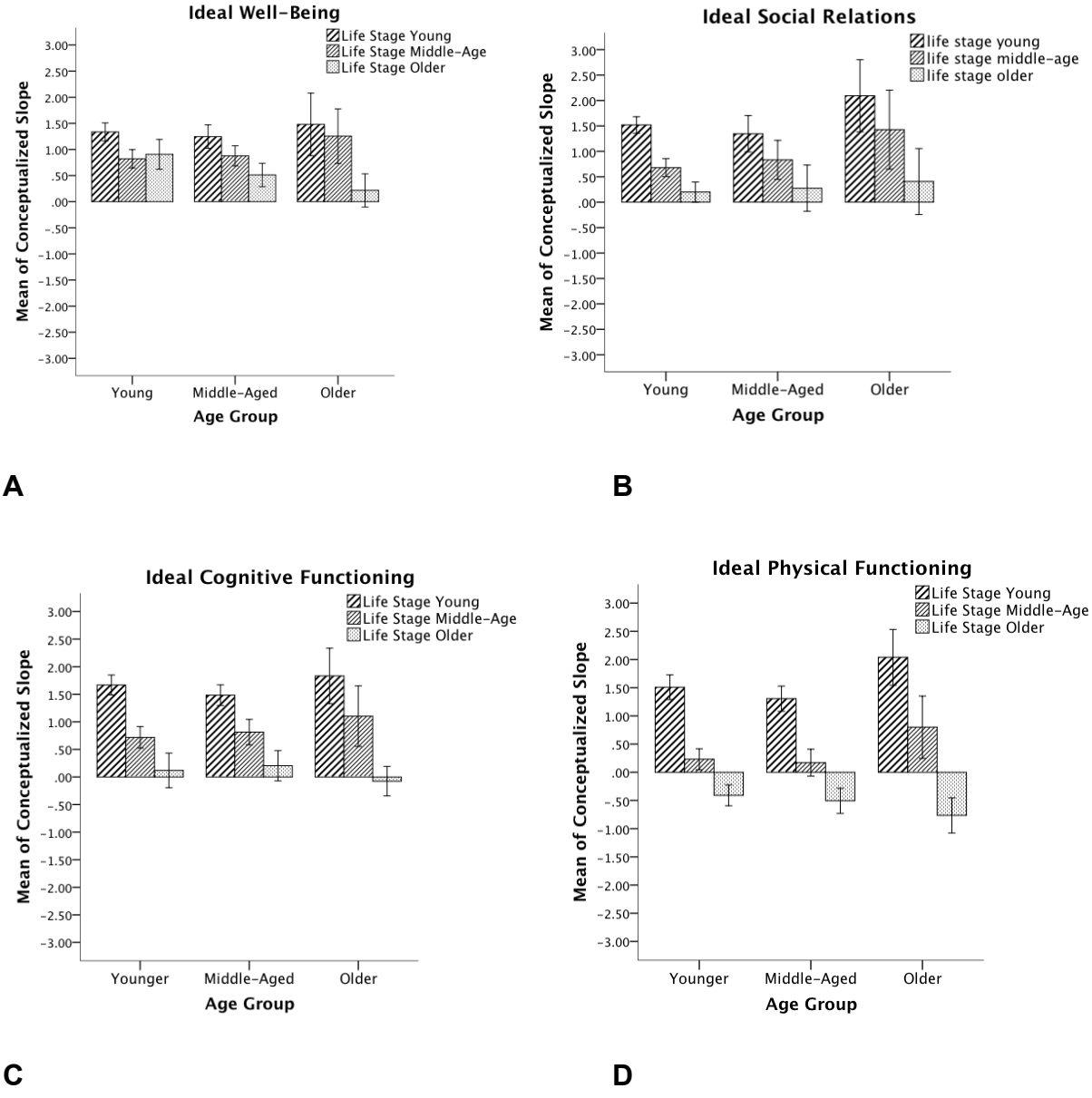
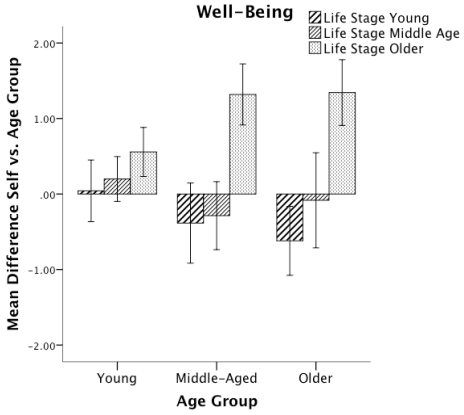
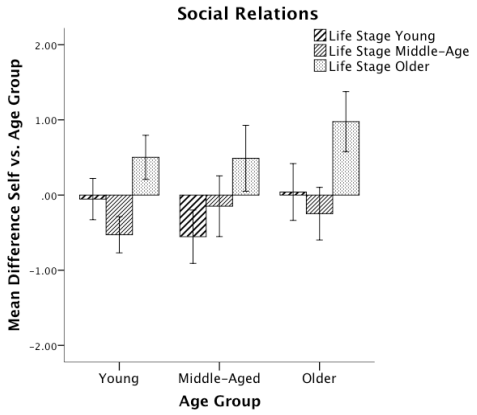


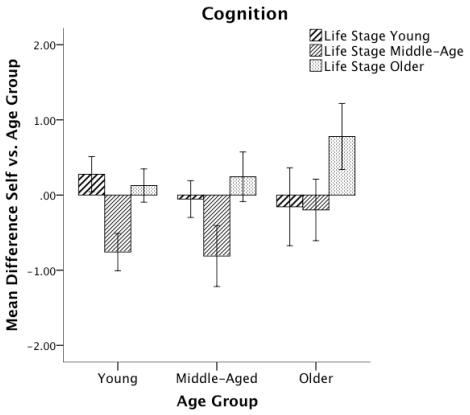
Figure 4. Mean slopes of drawings by three age groups for three life stages in the domains of (A) subjective well-being (B) social relations (C) cognition (D) physical functioning from the *ideal* perspective. Values above zero indicate that the particular life stage was associated with growth; values below zero indicate an association with decline. Error bars represent confidence intervals.

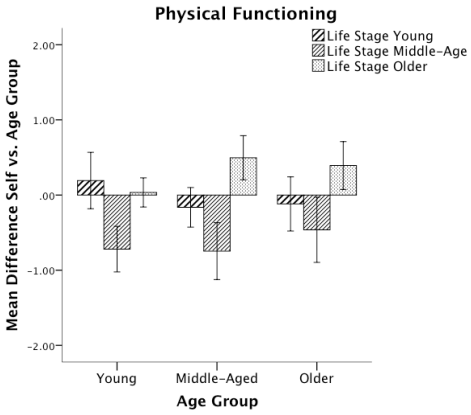
Appendix C

Difference scores between perceived self and ideal as well as self and one's age group development in (A) subjective well-being (B) social relations (C) cognition (D) physical function

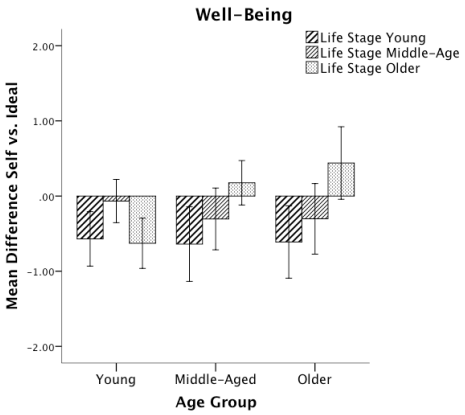








A



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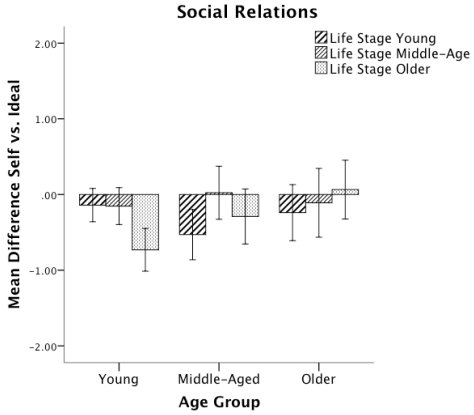

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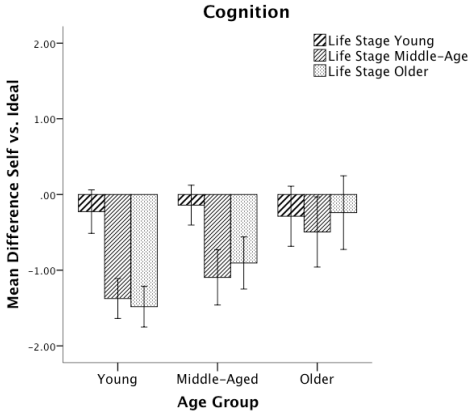

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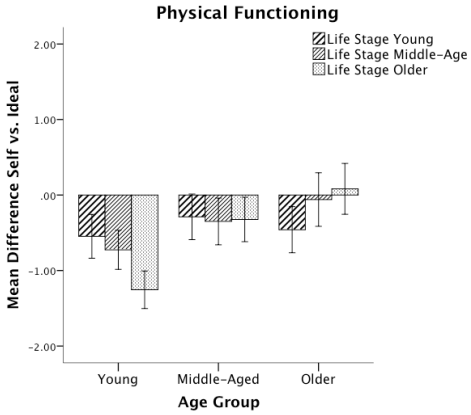

References

Abramson, L. Y., Seligman, M. E. P., & Taesdale, J. P. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87,* 49-74.

Ariely, D., & Wertenbroch, K. (2002). Procrastination, deadlines, and performance: Self-control by precommitment. *Psychological Science, 13,* 219-224. doi: 10.1111/1467-9280.00441

Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120,* 338-375. doi: 10.1037/0033-2909.120.3.338

Back, K. W., & Bourque, L. B. (1970). Life graphs: Aging and cohort effect. *Journal of Gerontology, 25*, 249-255. doi: 10.1093/geronj/25.3.249

Baltes, P. B. (1968). Longitudinal and cross-sectional sequences in the study of age and generation effects. *Human Development, 11*, 145-171. doi: 10.1159/000270604

Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology, 23,* 611-626. doi: 10.1037/0012-1649.23.5.611

Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory. *American Psychologist, 52,* 366-380. doi: 10.1037/0003-066X.52.4.366

Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1-34). New York: Cambridge University Press.

Baltes, P. B., Baltes, M. M., Freund, A. M., & Lang, F. (1999). *The measurement of selection, optimization, and compensation (SOC) by self-report: Technical report 1999.* Berlin, Germany: Max Planck Institute for Human Development.

Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (1998). Life-span theory in developmental psychology. In R. M. Lerner (Ed.), *Handbook of child psychology. Vol. 1: Theoretical models of human development* (5th ed., pp. 1029-1143). New York, NY: Wiley.

Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (2006). Life-span theory in developmental psychology. In R. M. Lerner (Ed.), *Handbook of child psychology. Vol. 1: Theoretical models of human development* (6th ed.). New York, NY: Wiley.

Baltes, P. B., & Smith, J. (2003). New frontiers in the future of aging: From successful aging of the young old to the dilemmas of the fourth age. *Gerontology, 49,* 123-135. doi: 10.1159/000067946

Bargh, J. A., & Ferguson, M. J. (2000). Beyond behaviorism: On the automaticity of higher mental processes. *Psychological Bulletin, 126*, 925-945. doi: 10.1037/0033-2909.126.6.925

Bargh, J. A., & Gollwitzer, P. M. (1994). Environmental control of goal-directed action: Automatic and strategic contingencies between situations and behavior. *Nebraska Symposium on Motivation, 41*, 71-124.

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology, 81,* 1014-1027. doi: 10.1037/0022-3514.81.6.1014

Bargh, J. A., & Pratto, F. (1986). Individual construct accessibility and perceptual selection. *Journal of Experimental Social Psychology, 22,* 293-311. doi: 10.1016/0022-1031(86)90016-8

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal*

of Personality and Social Psychology, 51(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173

Bijleveld, E., Custers, R., & Aarts, H. (2009). The unconscious eye opener: Pupil dilation reveals strategic recruitment of resources upon presentation of subliminal reward cues. *Psychological Science*, *20*(11), 1313-1315. doi:10.1111/j.1467-9280.2009.02443.x

Bless, H., & Schwarz, N. (2010). Mental construal and the emergence of assimilation and contrast effects: The inclusion/exclusion model. *Advances in Experimental Social Psychology*, *Volume 42*, 319-373. doi:10.1016/S0065-2601(10)42006-7

Boden, M. A. (1973). The structure of intentions. *Journal for the Theory of Social Behaviour, 3,* 23-46.

Bower, G. H. (1981). Mood and memory. *American Psychologist, 36*, 129-148. doi: 10.1037/0003-066X.36.2.129

Brandtstädter, J. (1989). Personal self-regulation of development: Cross-sequential analyses of development-related control beliefs and emotions. *Developmental Psychology, 25*, 96-108. doi: 10.1037/0012-1649.25.1.96

Brandtstädter, J. (1990). Entwicklung im Lebenslauf [Development across the lifespan]. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 31*, 322-350.

Brandtstädter, J. (2006). Adaptive resources in later life: Tenacious goal pursuit and flexible goal adjustment. In M. Csikszentmihalyi & I. S . Csikszentmihalyi (Eds.), *A life worth living: Contributions to positive psychology* (pp. 143-164). New York: Oxford University Press.

Brandtstädter, J., & Greve, W. (1994). The aging self: Stabilizing and protective processes. *Developmental Review, 14*, 52-80. doi: 10.1006/drev.1994.1003

Brandtstädter, J., & Renner G. (1990). Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilative and accommodative strategies of coping. *Psychology and Aging, 5,* 58-67. doi: 10.1037/0882-7974.5.1.58

Brandtstädter, J., Wentura, D., & Rothermund, K. (1999). Intentional self-development trough adulthood and later life: Tenacious pursuit and flexible adjustment of goals. In J. Brandtstädter & R. M. Lerner (Eds.), *Action and self-development: Theory and research through the life-span* (pp. 373-400). Thousand Oaks, CA: Sage.

Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In M. H. Appley (Ed.), *Adaptation-level theory: A symposium* (pp. 287-302). New York: Academic Press.

Burnette, J. L. (2010). Implicit theories of body weight: Entity beliefs can weigh you down. *Personality and Social Psychology Bulletin, 36,* 410-422. doi: 10.1177/0146167209359768

Buss, D. M. (1999). *Evolutionary psychology: The new science of the mind*. Needham Heights, MA: Allyn & Bacon.

Buunk, B. P., Collins, R. L., Taylor, S. E., VanYperen, N. W., & Dakof, G. A. (1990). The affective consequences of social comparison: Either direction has its ups and downs. *Journal of Personality and Social Psychology, 59*, 1238-1249. doi: 10.1037/0022-3514.59.6.1238

Cabeza, R. (2002). Hemispheric asymmetry reduction in older adults: The HAROLD model. *Psychology and Aging*, *17*(1), 85-100. doi:10.1037//0882-7974.17.1.85

Carstensen, L. L. (2006). The influence of a sense of time on human development. *Science*, *312*, 1913-1915. doi:10.1126/science.1127488

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*, 165-181. doi: 10.1037/0003-066X.54.3.165

Carstensen, L. L., & Turk-Charles, S. (1994). The salience of emotion across the adult life span. *Psychology and Aging, 2*, 259-264. doi: 10.1037/0882-7974.9.2.259

Caruso, E. M., Gilbert, D. T., & Wilson, T. D. (2008). A wrinkle in time: Asymmetric valuation of past and future events. *Psychological Science, 19,* 796-801. doi: 10.1111/j.1467-9280.2008.02159.x

Carver, C. S. (2004). Self-regulation of action and affect. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self regulation: Research, theory, and applications* (pp. 13-39). New York: Guilford Press.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior.* New York: Springer.

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality, social, clinical, and health psychology. *Psychological Bulletin, 92,* 111-135.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97,* 19-35. doi: 10.1037/0033-295X.97.1.19

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York: Cambridge University Press.

Charles, S. T., & Carstensen, L. L. (2010). Social and emotional aging. *Annual Review of Psychology*, *61*(1), 383-409. doi: 10.1146/annurev.psych.093008.100448

Clore, G., & Colcombe, S. (2003). The parallel worlds of affective concepts and feelings. In J. Musch & K. C. Klauer (Eds.), *The Psychology of evaluation: Affective processes in cognition and emotion* (pp. 335-369). Mahwah, NJ: Erlbaum.

Cochran, W., & Tesser, A. (1996). The "what the hell" effect: Some effects of goal proximity and goal framing on performance. In L. L. Martin & A. Tesser (Eds.),

Striving and feeling: Interactions among goals, affect and self-regulation (pp. 99-120). Mahwah, NJ: Erlbaum.

Collins, A. M., & Loftus, E. F. (1975). A spreading activation theory of semantic processing. *Psychological Review, 83*, 407-428. doi: 10.1037/0033-295X.82.6.407

Cottle, T. J. (1976). *Perceiving time: A psychological investigation with men and women.* New York, NY: Wiley.

Deci, E. L, Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125,* 627-668. doi: 10.1037/0033-2909.125.6.627

Diehl, M. K., & Wahl, H.-W. (2010). Awareness of age-related change: Examination of a (mostly) unexplored concept. *Journals of Gerontology Series B: Psychological Sciences & Social Sciences, 65B*, 340-350. doi: 10.1093/geronb/gbp110

Dittmann-Kohli, F. (1995). *Das persönliche Sinnsystem: Ein Vergleich zwischen frühem und spätem Erwachsenenalter* [The personal sense-system: A comparison of younger and older adulthood]. Göttingen, Germany: Hogrefe.

Duke, J., Leventhal, H., Brownlee, S., & Leventhal, E. A. (2002). Giving up and replacing activities in response to illness. *Journal of Gerontology: Psychological Sciences, 57,* 367-376. doi: 10.1093/geronb/57.4.P367

Dweck, C. S., & Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95,* 256-273. doi: 10.1037/0033-295X.95.2.256

Dweck, C. S., & Molden, D. C. (2005). Self-theories: Their impact on competence motivation and acquisition. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 122-140). New York: Guilford Press.

Earley, P. C., Northcraft, G. B., Lee, C., & Lituchy, T. R. (1990). Impact of process and outcome feedback on the relation of goal setting to task performance. *Academy of Management Journal, 33,* 87-105.

Ebner, N. C., Freund, A. M., & Baltes, P. B. (2006). Developmental changes in personal goal orientation from young to late adulthood: From striving for gains to maintenance and prevention of losses. *Psychology and Aging, 21*, 664-678. doi: 10.1037/0882-7974.21.4.664

Elliott, A. J., & Friedman, R. (2007). Approach-avoidance: A central characteristic of personal goals. In B. R. Little, K. Salmela-Aro, J. E. Nurmi, & S. D. Phillips (Eds.), *Personal project pursuit: Goals, action and human flourishing* (pp. 97-118). Mahwah, NJ: Erlbaum.

Emmons, R. A. (1989). The personal striving approach to personality. In L. A. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 87-126). Hillsdale, NJ: Erlbaum.

Emmons, R. A. (1992). Abstract versus concrete goals: Personal striving level, physical illness, and psychological well-being. *Journal of Personality and Social Psychology, 62,* 292-300. doi: 10.1037/0022-3514.62.2.292

Emmons, R. A. (1996). Striving and feeling: Personal goals and subjective well-being. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 313-337). New York: Guilford Press.

Fleeson, W., & Heckhausen, J. (1997). More or less "me" in past, present, and future: Perceived lifetime personality during adulthood. *Psychology and Aging, 12*, 125-136. doi: 10.1037/0882-7974.12.1.125

Förster, J., Liberman, N., & Friedman, R. S. (2007). Seven principles of goal activation: A systematic approach to distinguishing goal priming from priming of non-goal constructs. *Personality and Social Psychology Review, 11,* 211-233. doi: 10.1177/1088868307303029

Förster, J., Liberman, N., & Higgins, E. T. (2005). Accessibility from active and fulfilled goals. *Journal of Experimental Social Psychology, 41,* 220-239. doi: 10.1016/j.jesp.2004.06.009,

Freitas, A. L., Gollwitzer, P. M., & Trope, Y. (2004). The influence of abstract and concrete mindsets on anticipating and guiding others' self-regulatory efforts. *Journal of Experimental Social Psychology, 40*, 739-752. doi: 10.1016/j.jesp.2004.04.003

Freund, A. M. (2003). Die Rolle von Zielen für die Entwicklung [The role of goals for development]. *Psychologische Rundschau*, *54*, 233-242. doi: 10.1026//0033-3042.54.4.233

Freund, A. M. (2006). Differential motivational consequences of goal focus in younger and older adults. *Psychology and Aging, 21*, 240-252. doi: 10.1037/0882-7974.21.2.240

Freund, A. M. (2007). Differentiating and integrating levels of goal representation: A life-span perspective. In B. R. Little, K. Salmela-Aro & S. D. Phillips (Eds.), *Personal project pursuit: Goals, action, and human flourishing* (pp. 247-270). Mahawah, NJ: Erlbaum.

Freund, A. M., & Baltes, P. B. (1998). Selection, optimization, and compensation as strategies of life-management: Correlations with subjective indicators of successful aging. *Psychology and Aging, 13,* 531–543. doi: 10.1037/0882-7974.14.4.700

Freund, A. M., & Baltes, P. B. (2000). The orchestration of selection, optimization and compensation: An action-theoretical conceptualization of a theory of developmental regulation. In W. J. Perrig & A. Grob (Eds.), *Control of human behavior, mental processes, and consciousness: Essays in honor of the 60th birthday of August Flammer* (pp. 35-58). Mahwah, NJ: Erlbaum.

Freund, A. M., & Baltes, P. B. (2002). Life-management strategies of selection, optimization, and compensation: Measurement by self-report and construct validity. *Journal of Personality and Social Psychology, 82,* 642-662. doi: 10.1037/0022-3514.82.4.642

Freund, A. M., & Ebner, N. C. (2005). The aging self: Shifting from promoting gains to balancing losses. In W. Greve, K. Rothermund, & D. Wentura (Eds.), *The adaptive*

self: Personal continuity and intentional self-development (pp. 185-202). Ashland, OH: Hogrefe & Huber.

Freund, A. M., Hennecke, M., & Mustafić, M. (in press). On means and ends: Process and outcome focus. In R. Ryan (Ed.), *Oxford handbook of motivation*. Oxford: Oxford University Press.

Freund, A. M., Hennecke, M., & Riediger, M. (2010). Age-related differences in outcome and process goal focus. *European Journal of Developmental Psychology, 7*, 198-222.

Freund, A. M., Li, K. Z., & Baltes, P. B. (1999). Successful development and aging: The role of selection, optimization, and compensation. In *Action and self-development: Theory and research through the life span* (pp. 401-434). Thousand Oaks, CA: Sage.

Freund, A. M., & Riediger, M. (2001). What I have and what I do: The role of resource loss and gain throughout life. *Applied Psychology: An International Review, 50*, 370-380. doi: 10.1111/1464-0597.00063

Freund, A. M., & Riediger, M. (2003). Successful aging. In R. M. Lerner, A. Easterbrooks, & J. Mistry, (Eds.), *Comprehensive handbook of psychology: Volume 6: Developmental psychology* (pp. 601-628). New York, NY: Wiley.

Freund, A. M., & Riediger, M. (2006). Goals as building blocks of personality and development in adulthood. In D. K. Mroczek & T. D. Little (Eds). *Handbook of personality development.* (pp. 353-372). Mahwah, NJ: Erlbaum.

Freund, A. M., & Smith, J. (1999). Content and function of the self-definition in old and very old age. *The Journals of Gerontology, Series B: Psychological Sciences, 54*, 55-67. doi: 10.1093/geronb/54B.1.P55

Fujita, K., & Han, H. A. (2009). Moving beyond deliberative control of impulses: The effect of construal levels on evaluative associations in self-control conflicts. *Psychological Science, 20*, 799-804. doi: 10.1111/j.1467-9280.2009.02372.x

Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology, 90*, 351-367. doi: 10.1037/0022-3514.90.3.351

Fung, H. H., & Carstensen, L.L. (2004) Motivational changes in response to blocked goals and foreshortened time: Testing alternatives to socioemotional selectivity theory. *Psychology and Aging, 19,* 68-78.

Fung, H. H., & Carstensen, L. L. (2006). Goals change when life's fragility is primed: Lessons learned from older adults, the September 11th attacks and SARS. *Social Cognition*, *24*, 248-278. doi: 10.1521/soco.2006.24.3.248

Gawronski, B., Hofmann, W., & Wilbur, C. J. (2006). Are "implicit" attitudes unconscious? *Consciousness and Cognition*, *15*(3), 485–499. doi: 10.1016/j.concog.2005.11.007

Gawronski, B., & Strack, F. (2004). On the propositional nature of cognitive consistency: Dissonance changes explicit, but not implicit attitudes. *Journal of Experimental Psychology, 40,* 535-542. doi: 10.1016/j.jesp.2003.10.005

Gestsdottir, S., & Lerner, R. M. (2007). Intentional self-regulation and positive youth development in early adolescence*:* Findings from the 4-H Study of Positive Youth Development. *Developmental Psychology, 43,* 508-521. doi: 10.1037/0012-1649.43.2.508

Gigerenzer, G., Todd, P. M., & The ABC Research Group (1999). *Simple heuristics that make us smart: Evolution and cognition.* London, England: Oxford University Press.

Gluth. S., Ebner, N. C., & Schmiedek, F. (2010). Attitudes towards younger and older adults: The German aging semantic differential. *International Journal of Behavioral Development, 34*, 147-158. doi: 10.1177/0165025409350947

Gollwitzer, P. M. (1996). The volitional benefits of planning. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action* (pp. 287-312). New York: Guilford Press.

Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology, 73*, 186-199. doi: 10.1037/0022-3514.73.1.186

Gollwitzer, P. M., Heckhausen, H., & Steller, B. (1990). Deliberative and implemental mind-sets: Cognitive tuning toward congruous thoughts and information. *Journal of Personality and Social Psychology, 59*, 119-127. doi: 10.1037/0022-3514.59.6.1119

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, *102*, 4-27. doi: 10.1037/0033-295X.102.1.4

Greve, W., & Bjorklund, D. (2009). The Nestor-effect. Extending evolutionary developmental psychology to a lifespan perspective. *Developmental Review, 29,* 163-179. doi: 10.1016/j.dr.2009.04.001

Grühn, D., Gilet, A.-L., Studer, J., & Labouvie-Vief, G. (2011). Age-relevance of person characteristics: Persons' beliefs about developmental change across the lifespan. *Developmental Psychology, 47*, 376-387. doi: 10.1037/a0021315

Harackiewicz, J. M., Barron, K. E., Trauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement goals: Predicting interest and performance over time. *Journal of Educational Psychology, 92*, 316-330. doi: 10.1037/0022-0663.92.2.316

Hayes, A. F., & Preacher, K. J. (2011). *Indirect and direct effects of a multicategorical causal agent in statistical mediation analysis*. Manuscript submitted for publication.

Heckhausen, J. (1990). Entwicklung im Erwachsenenalter aus der Sicht junger, mittelalter und alter Erwachsener [Development from the view of younger, middle-aged, and older adults]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 12*, 1-12.

Heckhausen, H. (1991). *Motivation and action* (P. K. Leppmann, Trans.). New York: Springer. (Original work published 1989)

Heckhausen, J. (1997). Developmental regulation across adulthood: Primary and secondary control of age-related challenges. *Developmental Psychology, 33*, 176–187. doi: 10.1037/0012-1649.33.1.176

Heckhausen, J. (1999). *Developmental regulation in adulthood: Age-normative and sociostructural constraints as adaptive challenges*. New York: Cambridge University Press.

Heckhausen, J., & Brim, O. G. (1997). Perceived problems for self and others: Self-protection by social downgrading throughout adulthood. *Psychology and Aging, 12*, 610-619. doi: 10.1037/0882-7974.12.4.610

Heckhausen, J., Dixon, R. A., & Baltes, P. B. (1989). Gains and losses in development throughout adulthood as perceived by different adult age groups. *Developmental Psychology, 25*(1), 109-121. doi: 10.1037/0012-1649.25.1.109

Heckhausen, H., & Gollwitzer, P. M. (1987). Thought contents and cognitive functioning in motivational versus volitional states of mind. *Motivation and Emotion, 11*, 101-120. doi: 10.1007/BF00992338

Heckhausen, J., & Krueger, J. (1993). Developmental expectations for the self and most other people: Age grading in three functions of social comparison. *Developmental Psychology, 29*, 539-548. doi: 10.1037/0012-1649.29.3.539

Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review, 102*(2), 284-304. doi: 10.1037/0033-295X.102.2.284

Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of life-span development. *Psychological Review, 117*, 32-60. doi: 10.1037/a0017668

Hennecke, M., & Freund, A. M. (2010). Staying on and getting back on the wagon: Age-related improvement in self-regulation during a low-calorie diet. *Psychology and Aging, 25,* 876-885. doi: 10.1037/a0019935

Hennecke, M., & Freund, A. M. (in revision). The path or the goal? Process versus outcome focus and the mastery of failure.

Hess, T. M., & Ennis, G. E. (2011). Age differences in the effort and costs associated with cognitive activity. *Journal of Gerontology: Psychological Sciences*, *10.1093/geronb/gbr129*

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist, 52*, 1280-1300. doi: 10.1037/0003-066X.52.12.1280

Higgins, E. T., Bargh, J. A., & Lombardi, W. (1985). Nature of priming effects on categorization. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 11,* 58-69. doi: 10.1037/0278-7393.11.1.59

Horhota, M., Lineweaver, T., Ositelu, M., Summers, K., & Hertzog, C. (2011). Internal strategies or active lifestyles? Young and older adult's beliefs about effective ways to mitigate memory decline. *Psychology and Aging*, No Pagination Specified. doi: 10.1037/a0026088

Houser-Marko, L., & Sheldon, K. (2006). The self-as-doer construct: Implications for sustained motivation. *Personality and Social Psychology Bulletin, 32,* 1037–1049. doi: 10.1177/0146167206287974

Houser-Marko, L., & Sheldon, K. (2008). Eyes on the prize or nose to the grindstone: The effects of level of goal evaluation on mood and motivation. *Personality and Social Psychology Bulletin, 34,* 1556-1569. doi: 10.1177/0146167208322618

Hsee, C. K., & Abelson, R. P. (1991). Velocity relation: Satisfaction as a function of the first derivative of outcome over time. *Journal of Personality and Social Psychology, 60,* 341-347. doi: 10.1037/0022-3514.60.3.341

Hummert, M. L. (1990). Multiple stereotypes of elderly and young adults: A comparison of structure and evaluations. *Psychology and Aging, 5*, 182-193. doi: 10.1037/0882-7974.5.2.182

Hummert, M. L., Garstka, T., Shaner, J., & Strahm, S. (1994). Stereotypes of the elderly held by young, middle-aged, and elderly adults. *Journal of Gerontology, 49*, 240-249. doi: 10.1093/geronj/49.5.P240

Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review*, *65*(1), 19-51. doi:10.2307/2657288

Isaacowitz, D. M. Toner, K., Goren, D., & Wilson, H. R. (2008). Looking while unhappy: Mood congruent gaze in young adults, positive gaze in older adults. *Psychological Science*, 19, 843-853. doi: 10.1111/j.1467-9280.2008.02167.x

Isaacowitz. D. M., Toner, K., & Neupert, S. D. (2009). Use of gaze for real-time mood regulation: Effects of age and attentional functioning. *Psychology and Aging*, 24, 989-994. doi: 10.1037/a0017706

Jopp, D., & Smith, J. (2006). Resources and life-management strategies as determinants of successful aging: On the protective effect of selection, optimization, and compensation. *Psychology and Aging, 21*, 253–265. doi: 10.1037/0882-7974.21.2.253

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*, 263-291.

Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy of Management Review, 3*, 440-458.

Klauer, K. C., & Musch, J. (2003). Affective priming: Findings and theories. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion*. Mahwah, NJ: Erlbaum.

Klinger, E. (1977). *Meaning and void: Inner experience and the incentives in people's lives*. Minneapolis, MN: University of Minnesota Press.

Kornadt, A. E., & Rothermund, K. (2011a). Internalization of age stereotypes into the self-

concept via future self-views: A general model and domain-specific differences. *Psychology and Aging.* doi: 10.1037/a0025110

Kornadt, A. E., & Rothermund, K. (2011b). Contexts of aging: assessing evaluative age stereotypes in different life domains. *The Journals of Gerontology, Series B: Psychological Sciences*, *66B*, 547-556. doi: 10.1093/geronb/gbr036

Kotter-Grühn, D., & Smith, J. (2011). When time is running out: Changes in positive future perception and their relationships to changes in well-being in old age. *Psychology and Aging, 26*, 381-387. doi: 10-.1037/a022223

Krapp, A. (2005). Basic needs and the development of interest and intrinsic motivational orientations. *Learning and Instruction, 15*, 381-395. doi: 10.1016/j.learninstruc.2005.07.007

Krueger, J., Heckhausen, J., & Hundertmark, J. (1995). Perceiving middle-aged adults: Effects of stereotype-congruent and incongruent information. *The Journals of Gerontology, Series B: Psychological Sciences, 50B*, P82-P93. doi: 10.1093/geronb/50B.2.P82

Kruglanski, A. W. (1996). Goals as knowledge structures. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 599-618). New York: Guilford Press.

Kruglanski, A. W., & Jaffe, Y. (1988). Curing by knowing: The epistemic approach to cognitive therapy. In L. Abramson (Ed.), *Social cognition and clinical psychology* (pp. 254-291). New York: Guilford Press.

Kruglanski, A. W., Bélanger, J. J., Chen, X., Köpetz, C., Pierro, A., & Mannetti, L. (2012). The energetics of motivated cognition: A force-field analysis. *Psychological Review*, *119*(1), 1-20. doi:10.1037/a0025488

Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., & Sleeth-Keppler, D. (2002). A theory of goal systems. In M. P. Zanna (Ed.) *Advances in experimental social psychology* (Vol. 34, pp. 331-378). New York: Academic Press.

Kuhl, J., & Beckmann, J. (1994). *Volition and personality: Action versus state orientation.* Seattle, WA: Hogrefe & Huber.

Kunzmann, U. (2008). Differential age trajectories of positive and negative affect: Further evidence from the Berlin Aging Study. *The Journals of Gerontology, Series B: Psychological Sciences, 63B*, 261-270.

Labouvie-Vief, G. (1981). Proactive and reactive aspects of constructivism: Growth and aging in life-span perspective. In R. M. Lerner & N. A. Busch-Rossnagel (Eds.), *Individuals as producers of their development* (pp. 197-230). New York: Academic Press.

Labroo, A. A., & Kim, S. (2009). The "instrumentality" heuristic: Why metacognitive difficulty is desirable during goal pursuit. *Psychological Science, 20*(1), 127-134. doi: 10.1111/j.1467-9280.2008.02264.x

Lachman, M. E. (1986). Locus of control in aging research: A case for multidimensional and domain-specific assessment. *Psychology and Aging*, 34-40. doi: 10.1037/0882-7974.1.1.34

Lachman, M. E., & Firth, K. M. (2004). The adaptive value of feeling in control during midlife. In O. G. Brim, C. D. Ryff & R. Kessler (Eds.), *How healthy are we?: A national study of well-being at midlife* (pp. 320-349). Chicago, IL: University of Chicago Press.

Lang, F. R., & Heckhausen, J. (2001). Perceived control over development and subjective well-being: Differential benefits across adulthood. *Journal of Personality and Social Psychology*, *81*, 509-523. doi:10.1037/0022-3514.81.3.509

Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17,* 125-139. doi: 10.1037/0882-

7974.17.1.125

Lang, F., Görlitz, D., & Seiwert, M. (1992). Altersposition und Beurteilungsperspektive als Faktoren laienpsychologischer Urteile über Entwicklung [Age-position and perspective as factors of lay-judgements on development]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 24*, 298-316.

Lang, F. R., Rieckmann, N., & Baltes, M. M. (2002). Adapting to aging losses: Do resources facilitate strategies of selection, compensation, and optimization in everyday functioning? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 57*, 501-509.

Ledgerwood, A., & Sherman, J. W. (2012). Short, sweet, and problematic? The rise of the short report in psychological science. *Perspectives on Psychological Science, 7,* 60-66. doi:10.1177/1745691611427304

Lepper, M. (1981). Intrinsic and extrinsic motivation in children: Detrimental effects of superfluous social controls. In W. W. Collins (Ed.), *Minnesota symposium on child psychology* (Vol. 14, pp. 155-214). Hillsdale, NJ: Erlbaum.

Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology*, *28*, 129-137.

Lerner, R. M., & Busch-Rossnagel, N. (1981). *Individuals as producers of their development: A life-span perspective*. New York: Academic Press.

Levy, B. R. (1996). Improving memory in old age through implicit self-stereotyping. *Journal of Personality & Social Psychology, 71*, 1092-1107. doi: 10.1037/0022-3514.71.6.1092

Levy, B. R., Zonderman, A. B., Slade, M. D., & Ferrucci, L. (2009). Age stereotypes held earlier in life predict cardiovascular events in later life. *Psychological Science, 20*, 299-308. doi: 10.1111/j.1467-9280.2009.02298.x

Little, B. R. (1989). Personal projects analysis: Trivial pursuits, magnificent obsessions, and the search for coherence. In D. M. Buss & N. Cantor (Eds.), *Personality psychology: Recent trends and emerging directions* (pp. 15-31). New York: Springer.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57,* 705-717. doi: 10.1037/0003-066X.57.9.705

Logan, J. M., Sanders, A. L., Snyder, A. Z., Morris, J. C., & Buckner, R. L. (2002). Under-recruitment and nonselective recruitment: Dissociable neural mechanisms associated with aging. *Neuron*, *33*, 827–840. doi:10.1016/S0896-6273(02)00612-8

Luo, L., & Craik, F. I. M. (2008). Aging and memory: A cognitive approach. *The Canadian Journal of Psychiatry*, *53*, 346-353.

Luo, L., & Craik, F. I. M. (2009). Age differences in recollection: Specificity effects at retrieval. *Journal of Memory and Language*, *60*, 421-436. doi: 10.1016/j.jml.2009.01.005

Manderlink, G., & Harackiewicz, J. M. (1984). Proximal versus distal goal setting and intrinsic motivation. *Journal of Personality and Social Psychology, 47*, 918-928. doi: 10.1037/0022-3514.47.4.918

Marsiske, M., Lang, F. B., Baltes, P. B., & Baltes, M. M. (1995). Selective optimization with compensation: Life-span perspectives on successful human development. In R. A. Dixon & L. Bäckman (Eds.), *Compensating for psychological deficits and declines: Managing losses and promoting gains* (pp. 35-79). Hillsdale, NJ: Erlbaum.

Martin, L. L., & Tesser, A. (1989). Toward a motivational and structural theory of ruminative thought. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 306-326). New York: Guilford Press.

Mather, M., & Carstensen, L. L. (2005). Aging and motivated cognition: The positivity effect in attention and memory. *Trends in Cognitive Sciences*, *9*, 496-502.

doi:10.1016/j.tics.2005.08.005

McFarland, C., Ross, M., & Giltrow, M. (1992). Biased recollections in older adults: The role of implicit theories of aging. *Journal of Personality & Social Psychology, 62*, 837-850. doi: 10.1037/0022-3514.62.5.837

Mellers, B. A. (2000). Choice and the relative pleasure of consequences. *Psychological Bulletin, 126,* 910-924. doi: 10.1037/0033-2909.126.6.910

Miller, G., A., Galanter, E., & Pribram, K. H. (1960). *Plans and the structure of behavior*. New York: Henry Holt.

Miller, L. M., & Lachman, M. E. (1999). The sense of control and cognitive aging: Toward a model of meditational processes. In T. M. Hess & F. Blanchard-Fields (Eds.), *Social cognition and aging* (pp. 17-41). San Diego, CA: Academic Press.

Mock, S. E., & Eibach, R. P. (in press). Aging attitudes moderate the effect of subjective age on psychological well-being: Evidence from a 10-year longitudinal study. *Psychology and Aging*. No pagination specified. doi: 10.1037/a0023877

Moser, C., Spagnoli, J., & Santos-Eggimann, B. (2011). Self-perception of aging and vulnerability to adverse outcomes at the age of 65–70 years. *The Journals of Gerontology, Series B: Psychological Sciences.* doi: 10.1093/geronb/gbr052

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review*, *110,* 472-489. doi:10.1037/0033-295X.110.3.472

Mussweiler, T., & Epstude, K. (2009). Relatively fast! Efficiency advantages of comparative thinking. *Journal of Experimental Psychology: General*, *138*(1), 1-21. doi:10.1037/a0014374

Mussweiler, T., Rüter, K., & Epstude, K. (2004). The man who wasn't there: Subliminal social comparison standards influence self-evaluation. *Journal of Experimental Social Psychology*, *40*(5), 689-696. doi:10.1016/j.jesp.2004.01.004

Mustafić, M., & Freund, A. M. (2011). *Decrease of subjective multidimensionality across adulthood*. Manuscript submitted for publication.

Neugarten, B. L., Moore, J. W., & Lowe, J. C. (1965). Age norms, age constraints, and adult socialization. *American Journal of Sociology, 70*, 710-717.

Neumann, R., Förster, J., & Strack, F. (2003). Motor compatibility: The bidirectional link between behavior and evaluation. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 371-391). Mahwah, NJ: Erlbaum.

Neupert, S. D., & Allaire, J. C. (2012). I think I can, I think I can: Examining the within-person coupling of control beliefs and cognition in older adults. *Psychology and Aging*, No Pagination Specified. doi:10.1037/a0026447

Newman, J., & Taylor, A. (1992). Effect of a means end contingency on young children's food preferences. *Journal of Experimental Psychology, 64,* 200-16.

Oettingen, G., & Hagenah, M. (2005). Fantasies and the self-regulation of competence. In A. Elliot & C. Dweck (Eds.), *Handbook of competence and motivation* (pp. 647-665). New York: Guilford.

Ogilvie, D. M., Rose, K. M., & Heppen, J. B. (2001). A comparison of personal project motives in three age groups. *Basic and Applied Social Psychology, 23*, 207-215. doi: 10.1207/153248301750433768

Park, D. C., Polk, T. A., Park, R., Minear, M., Savage, A., & Smith, M. R. (2004). Aging reduces neural specialization in ventral visual cortex. *Proceedings of the National Academy of Sciences of the United States of America*, *101*, 13091 -13095. doi:10.1073/pnas.0405148101

Payne, B. K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology, 89*, 277-293. doi: 10.1037/0022-3514.89.3.277

Pham, L. B., & Taylor, S. E. (1999). From thought to action: effects of process- versus outcome-based mental simulations on performance. *Personality and Social Psychology Bulletin, 25,* 250-260. doi: 10.1177/0146167299025002010

Polivy, J., & Herman, C. P. (1985). Dieting as a problem in behavioral medicine. In E. Katkin & S. Manuck (Eds.), *Advances in behavioral medicine* (pp. 1-37). New York: SAI.

Pomerantz, E. M., Saxon, J. L., & Oishi, S. (2000). The psychological trade-offs of goal investment. *Journal of Personality and Social Psychology, 79,* 617-630. doi: 10.1037/0022-3514.79.4.617

Raynor, J. O. (1982). A theory of personality functioning and change. In J. O. Raynor & E. E. Entin (Eds.), *Motivation, Career Striving and Aging* (pp.249-302). Washington, DC: Hemisphere.

Reuter-Lorenz, P. A., Jonides, J., Smith, E. E., Hartley, A., Miller, A., Marshuetz, C., & Koeppe, R. A. (2000). Age differences in the frontal lateralization of verbal and spatial working memory revealed by PET. *Journal of Cognitive Neuroscience*, *12*(1), 174-187. doi:10.1162/089892900561814

Riediger, M., & Freund, A. M. (2004). Interference and facilitation among personal goals: Differential association with subjective well-being and persistent goal pursuit. *Personality and Social Psychology Bulletin, 30,* 1511–1523. doi: 10.1177/ 0146167204271184

Riediger, M., & Freund, A. M. (2006). Focusing and restricting: Two aspects of motivational selectivity in adulthood. *Psychology and Aging, 21*, 173-185. doi: 10.1037/0882-7974.21.1.173

Riediger, M., & Freund, A. M. (2008). Me against myself: Motivational conflicts and emotional development in adulthood. *Psychology and Aging, 23*, 479-494. doi: 10.1037/a0013302

Riediger, M., Freund, A. M., & Baltes, P. B. (2005). Managing life through personal goals: Intergoal facilitation and intensity of goal pursuit in younger and older adulthood. *Journals of Gerontology: Psychological Sciences, 60B*, 84-91. doi: 10.1093/geronb/60.2.P84

Robinson, M. D., Vargas, P. T., & Crawford, E. G. (2003). Putting process into personality, appraisal, and emotion: Evaluative processing as a missing link. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 275-306). Mahwah, NJ: Erlbaum.

Röcke, C., & Lachmann, M. E. (2008). Perceived trajectories of life satisfaction: Profiles and correlates of subjective change in young, middle-aged, and older adults. *Psychology and Aging, 23*, 833-847. doi: 10.1037/a0013680

Röcke, C., Li, S.-C., & Smith, J. (2009). Intraindividual variability in positive and negative affect over 45 days: Do older adults fluctuate less than young adults? *Psychology and Aging*, *24*, 863-878. doi: 10.1037/a0016276

Ross, M. (1989). Relation of implicit theories to the construction of personal histories. *Psychological Review, 96*, 341-357. doi: 10.1037/0033-295X.96.2.341

Rossi, S., Miniussi, C., Pasqualetti, P., Babiloni, C., Rossini, P. M., & Cappa, S. F. (2004). Age-related functional changes of prefrontal cortex in long-term memory: A repetitive transcranial magnetic stimulation study. *The Journal of Neuroscience*, *24*, 7939 -7944. doi:10.1523/JNEUROSCI.0703-04.2004

Rothbaum, F. (1983). Aging and age stereotypes. *Social Cognition*, *2*, 171-184.

Rothermund, K., & Brandtstädter, J. (2003). Age stereotypes, self-views, and well-being in later life: Evaluating rival assumptions. *International Journal of Behavioral Development*, *27*, 549-554. doi: 10.1080/01650250344000208

Rozin, P., & Royzman, E. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5, 296-320. doi: 10.1207/

S15327957PSPR0504_2

Ryan, R. M, Sheldon, K. M., Kasser, T., & Deci, E. L. (1996). All goals are not created equal: An organismic perspective on the nature of goals and their regulation. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 7-26). New York: Guilford Press.

Ryff, C. D. (1991). Possible selves in adulthood and old age: A tale of shifting horizons. *Psychology and Aging, 6*, 286-295. doi: 10.1037/0882-7974.6.2.286

Samanez-Larkin, G. R., & Carstensen, L. L. (2011). Socioemotional functioning and the aging brain. In J. Decety & J. T. Cacioppo (Eds.), *The handbook of social neuroscience* (pp. 507-521). New York: Oxford University Press.

Sansone, C., & Thoman, D. B. (2005). Interest as the missing motivator in self-regulation. *European Psychologist, 10*, 175-186. doi: 10.1027/1016-9040.10.3.175

Schaie, K. W. (1965). A general model for the study of developmental problems. *Psychological Bulletin, 64*, 92-107.

Schmalt, H.-D., & Sokolowski, K. (2006). Motivation. In H. Spada (Ed.), *Allgemeine Psychologie* (3. Ed., pp. 501-552). Bern, Switzerland: Huber.

Schmitz, B., & Wiese, B. S. (1999). Eine Prozessstudie selbstregulierten Lernverhaltens im Kontext aktueller affektiver und motivationaler Faktoren [A process study of self-regulated learning behavior in the context of motivational and emotional states]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 31*, 157-170.

Schwarz, N. (in press). Feelings as information theory. In P. Van Lange, A. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology*. Thousand Oaks, CA: Sage.

Seijts, G. H., & Latham, G. P. (2005). Learning versus performance goals: When should each be used? *Academy of Management Executive, 19*, 124-131.

VandeWalle, D., Brown, S. P., Cron, W. L., & Slocum Jr., J. W. (1999). The influence of goal orientation and self-regulation tactics on sales performance: A longitudinal field test. *Journal of Applied Psychology, 84,* 249-259.

Voss, A., Rothermund, K., & Brandtstädter, J. (2008). Interpreting ambiguous stimuli: Separating perceptual and judgmental biases. *Journal of Experimental Social Psychology*, *44*, 1048–1056. doi:10.1016/j.jesp.2007.10.009

Weiss, D. (2009). *Aging identities: The ambivalence of age group and generation belonging*. Erlangen-Nuernberg, Germany: Friedrich-Alexander University.

Wentura, D. (2000). Dissociative affective and associative priming effects in the lexical decision task: Yes versus no responses to word targets reveal evaluative judgment tendencies. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*, 456-469. doi:10.1037//0278-7393.26.2.456

Wiese, B. S., & Freund, A. M. (2001). Zum Einfluss persönlicher Prioritätensetzungen auf Masse der Stimuluspräferenz [The impact of personal priorities on stimulus preference]. *Zeitschrift für Experimentelle Psychologie, 48,* 57–73.

Wiese, B. S., & Freund, A. M. (2005). Goal progress makes one happy, or does it? Longitudinal findings from the work domain. *Journal of Occupational and Organizational Psychology, 78*, 287-304.

Wiese, B. S., Freund, A. M., & Baltes, P. B. (2000). Selection, optimization, and compensation: An action-related approach to work and partnership. *Journal of Vocational Behavior, 57*, 273-300. doi: 10.1006/jvbe.2000.1752

Wiese, B. S., Freund, A. M., & Baltes, P. B. (2001). Longitudinal predictions of selection, optimization, and compensation. *Journal of Vocational Behavior, 59*, 1-15. doi: 10.1006/jvbe.2001.1835

Willemsen, M. C., Böckenholt, U., & Johnson, E. J. (2011). Choice by value encoding and value construction: Processes of loss aversion. *Journal of Experimental Psychology:*

Soubelet, A., & Salthouse, T. A. (2011). Influence of social desirability on age-difference in self-reports on mood and personality. *Journal of Personality, 79*, 741-762. doi: 10.1111/j.1467-6494.2011.00700.x

Staudinger, U. M., Bluck, S., & Herzberg, P. Y. (2003). Looking back and looking ahead: Adult age differences in consistency of diachronous ratings of subjective well-being. *Psychology and Aging, 18*, 13-24. doi: 10.1037/0882-7974.18.1.13

Staudinger, U. M., Marsiske, M., & Baltes, P. B. (1995). Resilience and reserve capacity in later adulthood: Potentials and limits of development across the life span. In D. Ciccetti & D. J. Cohen (Eds.), *Developmental psychopathology, Vol. 2: Risk, disorder, and adaptation* (pp. 801-847). New York, NY: Wiley.

Stroebe, W., Mensink, W., Aarts, H., Schut, H., & Kruglanski, A. (2008). Why dieters fail: Testing the goal conflict model of eating. *Journal of Experimental Social Psychology, 44,* 26-36. doi: 10.1016/j.jesp.2007.01.005

Taylor, S. E., Pham, L. B. Rivkin, I. D., & Armor, D. A. (1998). Harnessing the imagination: Mental simulation, self-regulation, and coping. *American Psychologist, 53*, 429-439. doi: 10.1037/0003-066X.53.4.429

Thomae, H. (1989). Changes of time perspective in later adulthood. *Zeitschrift für Gerontologie, 22*, 58-66.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110*, 403-421. doi: 10.1037/0033-295X.110.3.403

Vallacher, R. R., & Wegner, D. M. (1985). *A theory of action identification*. Hillsdale, NJ: Erlbaum.

VandeWalle, D. (2001). Goal orientation: Why wanting to look successful doesn't always lead to success. *Organizational Dynamics, 30*, 162-171.

General, *140*, 303-324. doi:10.1037/a0023493

Wilson, A. E., & Ross, M. (2001). From chump to champ: People's appraisals of their earlier and present selves. *Journal of Personality & Social Psychology, 80*, 572-584. doi: 10.1037//0022-3514.80.4.572

Woike, B., Lavezzary, E., & Barsky, J. (2001). The influence of implicit motives on memory processes. *Journal of Personality and Social Psychology, 81*, 935-945. doi: 10.1037/0022-3514.81.5.935

Wrosch, C., Scheier, M. F., Carver, C. S., & Schulz, R. (2003). The importance of goal disengagement in adaptive self-regulation: When giving up is beneficial. *Self and Identity, 2*, 1-20.

Wrosch, C., & Schulz, R. (2008). Health engagement control strategies and 2-year changes in older adults' physical health. *Psychological Science*, *19*, 537-541. doi: 10.1111/j.1467-9280.2008.02120.x

Wurm, S., Tesch-Römer, C., & Tomasik, M. J. (2007). Longitudinal findings on aging-related cognitions, control beliefs, and health in later life. *The Journals of Gerontology, Series B: Psychological Sciences*, *62B*, 156-164.

Wurm, S., Tomasik, M. J., & Tesch-Römer, C. (2010). On the importance of a positive view on aging for physical exercise among middle-aged and older adults: Cross-sectional and longitudinal findings. *Psychology and Health*, *25*, 25-42. doi: 10.1080/08870440802311314

Wyer, R. S., & Srull, T. K. (1986). Human cognition in its social context. *Psychological Review, 93*, 322-359. doi: 10.1037/0033-295X.93.3.322

Young, L. M., Baltes, B. B., & Pratt, A. K. (2007). Using selection, optimization, and compensation to reduce job/family stressors: Effective when it matters. *Journal of Business and Psychology, 21*, 511-539.

Ziegelmann, J. P., & Lippke, S. (2007). Use of selection, optimization, and compensation strategies in health self-regulation: Interplay with resources and successful development. *Journal of Aging and Health, 19,* 500-518. doi: 10.1177/0898264307300197

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid reliable individual-differences metric. *Journal of Personality and Social Psychology, 77*, 1271-1288. doi: 10.1037/0022-3514.77.6.1271

Zimmerman, B. J., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process to outcome goals. *Journal of Educational Psychology, 89*, 29-36. doi: 10.1037/0022-0663.89.1.29

Zimmerman, B. J., & Kitsantas, A. (1999). Acquiring writing revision skill: Shifting from process to outcome self-regulatory goals. *Journal of Educational Psychology, 91*, 241-250. doi: 10.1037/0022-0663.91.2.241

Zusammenfassung

Bisherige Forschung zeigt, dass Personen, je älter sie werden, mehr Gewinne als Verluste erwarten und andere entwicklungsbezogene Ziele in jüngerem als im älteren Erwachsenenalter verfolgen. Die vorliegende Dissertation integriert Befunde zu Altersunterschieden in Entwicklungskonzeptionen (d.h., *wie* Entwicklung betrachtet wird) mit Forschung zu Zielen (d.h., *welche* Ziele über das Lebensalter *auf welche Wiese* verfolgt werden), indem Sie erstmals altersbedingte Veränderungen der Bewertung von Entwicklungsergebnissen (Verbesserung, Stabilität, Verlust) und deren Bedeutung für zielbezogene Informationsverarbeitung demonstriert.

Die vorliegende Arbeit ist in vier Teile gegliedert. Im ersten Teil replizierten zwei Studien (Studie 1: $N = 234$, 18 – 83 Jahre; Studie 2: $N = 166$, 20 – 85 Jahre) eine Zunahme von Verlusterwartungen über die Lebensspanne und erweiterten diese in Bezug auf ihre wahrgenommene Multidimensionalität, d.h. in Bezug auf Unterschiede zwischen Lebensbereichen (soziale Beziehungen, subjektives Wohlbefinden, kognitive und physische Leistungsfähigkeit) und Altersstufen (junges, mittleres und älteres Erwachsenenalter). Mit neu entwickelten Untersuchungsmethoden zeigten die Studien, dass die wenigsten Verluste für den Bereich des subjektiven Wohlbefindens erwartet werden. Zusätzlich wird die Funktionalität der Entwicklungskonzeption des Wohlbefindens in Bezug auf Kontrollerleben und das aktuelle Wohlbefinden demonstriert. Zudem belegen die Studien erstmals, dass die wahrgenommene Multidimensionalität der Entwicklungsverläufe über das Lebensalter hinweg abnimmt.

In zwei Studien in Teil II wurde angenommen, dass die in Teil I untersuchten Entwicklungskonzeptionen als Vergleichsstandards zur Bewertung von Entwicklungsergebnissen herangezogen werden. Selbstbericht und quasiexperimentelle Befunde aus Studie 1 ($N = 119$, 16 – 74 Jahre) und Studie 2 ($N = 182$, 18 – 86 Jahre) bestätigen, dass ältere

Erwachsene Verlust weniger negativ beurteilen als jüngere. Zudem wurde mit steigendem Lebensalter Stabilität weniger negativ und mehr positiv beurteilt.

In Teil III wurde theoretisch argumentiert, dass die Verfolgung von Entwicklungsergebnissen wie Stabilität oder Veränderung Altersunterschiede in Zielrepräsentationen in Bezug auf Mittel oder Ergebnisse erklärt. Eine Selbstberichtsstudie in Teil IV belegte erstmals, dass Stabilitätsziele mit einer Repräsentation von Mitteln einhergehen, während Veränderungsziele mit einer Repräsentation von Ergebnissen assoziiert sind.

Zuletzt wird in dieser Arbeit die Veränderung der Bewertung von Entwicklungs-ergebnissen hinsichtlich ihres Beitrages für eine erfolgreiche Entwicklungsregulation über die Lebensspanne integriert und diskutiert.

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PROFESSIONAL POSITIONS

09/2007 – present	Predoctoral researcher, Applied Psychology: Life Management (Head: Prof. Alexandra M. Freund), University of Zurich, Switzerland
08/2008 – present	Fellow, International Max Planck Research School "The Life Course: Evolutionary and Ontogenetic Dynamics"
06/2006 – 11/2006	Research Assistant, Department of Social Psychology (Head: Prof. Dr. Manfred Hassebrauck), University of Wuppertal, Germany
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EDUCATION

Formal Education

03/2007	M.S. ("Diplom") in Psychology, University of Wuppertal, Germany, Grade 1.3
09/2004	B.S. ("Vordiplom") in Psychology, University of Wuppertal, Germany, Grade 1.3
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Further Education - Postgraduate Seminars, Workshops and Academies

01/2012	Exploring Assumptions and Modern Statistical Methods, Prof. Dr. Andy Field, University of Sussex
12/2011	Multilevel Modeling for Intensive Longitudinal Data, Dr. Gertraud Stadler, Columbia University, New York
06/2011	Multiple Regression, Prof. Dr. Tanja Lieschetzke, University of Berlin
04/2011	Peripheral Physiology in the Laboratory: Introduction to Methods and Core Concepts, Prof. Dr. Andreas Keil, University of Florida
02/2011	Matlab for Psychological Experiments, Dr. Kai Lutz, University of Zurich
12/2010	Winter School "Fundamentals on Human Development and Aging", Prof. Dr. Hans-Werner Wahl, Universität Heidelberg, Prof. Dr. Manfred Diehl, Colorado State University
08/2010	Experimental Design and Statistical Power Analysis, Prof. Dr. Edgar Erdfelder, University of Mannheim
08/2010	Theory of planned behavior, Prof. Dr. Icek Ajzen, University of Massachusetts
08/2010	Longitudinal data analysis, PD Dr. Daniel Zimprich, University of Zurich
01/2010	Multiple regression analysis, PD Dr. Daniel Zimprich, University of Zurich
05/2009	Topics of Lifespan Development, Dr. Jochen Ziegelmann, University of Berlin

02/2009	Modern methods for the analysis of change, Prof. Paolo Ghisletta, University of Geneva
04/2008	Mixed linear models for longitudinal data, PD Dr. Daniel Zimprich, University of Zurich
01/2008	Writing research papers for publication, Dr. Wendy Swanson, University of Zurich
12/2007	Web experiments – Theoretical basics and practical applications, PD Dr. Ulf-Dietrich Reips, University of Zurich
11/2007	Literature administration with End Note, University of Zurich
05/2007	Hogan Leadership Forecast Series Certification, Dr. Rainer Neubauer, Metaconsulting, Dusseldorf
06/2005	Professional presentations, University of Wuppertal
05/2004	Multivariate data analysis, University of Wuppertal

RESEARCH INTERESTS

- Motivational, emotional and cognitive processes across the lifespan, goal-related information processing
- Evolutionary social psychology, life history theory
- Social cognition
- Knowledge acquisition and learning

RESEARCH AWARDS

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MEMBERSHIPS

- Peer Mentoring Group “Methods and Statistics”, University of Zurich
- German Psychological Society (DGPs)
  - Developmental Psychology Section
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TEACHING EXPERIENCE (GRADUATE LEVEL)

- Supervision Internship of 15 Master Students: Aquiring Training Skills of Social Competencies
- Process and Outcome Focus: A Research Methods-Oriented Seminar (Spring 2010)
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- Lifespan Development and (Evolutionary) Social Cognition
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STUDENT SUPERVISION (GRADUATE LEVEL)

- Supervision Bachelor Thesis: Muriel Gut, "Active Developmental Regulation Across the Lifespan: The Adaptivity of Subjective Developmental Theories" (Fall 2010)
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MASTER'S THESIS

Mustafić, M. (2007). Biological and psychological determinants of relationship orientation in men: A mediation analysis. Unpublished master's thesis, University of Wuppertal, Germany.

PUBLICATIONS

Mustafić, M., & Freund, A. M. (in press). Means or Outcome? Goal Orientation Predicts Goal Focus. *European Journal of Developmental Psychology*.

Mustafić, M., & Freund, A. M. (2011). Two Faces of Stability: Age-Differences in the Evaluation of Developmental Stability. Manuscript submitted for publication.

Mustafić, M., & Freund, A. M. (2011). Decrease of Perceived Multidimensionality Across Adulthood. Manuscript submitted for publication.

Freund, A. M., Hennecke, M., & Mustafić, M. (in press). On means and ends: Goal orientation and goal focus across adulthood. In R. Ryan (Ed.), *Oxford Handbook of Motivation*. Oxford: Oxford University Press.

Schwarz, S., Mustafić, M., Hassebrauck, M., & Jörg, J. (2010). 2D:4D finger length ratio and short-term orientation. *Archives of Sexual Behavior*, 40(3), 565-574, doi:10.1007/s10508-010-9698-9

CONFERENCE PRESENTATIONS

Mustafić, M., & Freund, A. M. (2010, December). Age-related differences in subjective conceptions of gains and losses across the lifespan. Paper presented at the Heidelberg Winter School "Fundamentals of Human Development and Aging", Heidelberg, Germany.

Mustafić, M. & Freund, A. M. (2010, September). Alters und Bereichsunterschiede in der Erwartung und Beeinflussbarkeit von Verlusten. Poster presented at the 47th Congress of the German Psychological Society, Bremen, Germany.

Mustafić, M. & Freund, A. M. (2010, May). Improvement for the Younger – Maintenance für the Old: Two Sides of the Same Coin? Paper presented at the LIFE Max Planck Research School Academy, Charlottesville, United States of America.

Mustafić, M. & Freund, A. M. (2009, October). Association between goal orientation and the means as well as the outcomes of a goal. Poster presented at the LIFE Max Planck Research School Academy, Ann Arbor, United States of America.

Mustafić, M. & Freund, A. M. (2009, September). Zeit und Ziele: Welche Rolle spielen Zeitorientierung und Zeitperspektive für die Repräsentation von Mitteln und Ergebnissen der Zielverfolung? Paper presented at the Conference for Developmental Psychology, University of Hildesheim, Hildesheim, Germany.

Mustafić, M. & Freund, A. M. (2009, August). Mittel oder Zweck? Präferenz für Prozess vs. Ergebnisfokus in Abhängigkeit der Orientierung auf Veränderung vs. Beibehaltung. Poster presented at the Motivation Psychology Colloquium, University of Zurich, Zurich, Switzerland.

Mustafić, M. & Freund, A. M. (2009, April). Does goal-orientation affect the salience of the means or the outcomes of a goal - Preliminary Results. Poster presented at the LIFE Max Planck Research School Academy, Zurich, Switzerland.

Mustafić, M. & Freund, A. M. (2008, October). Does goal-orientation affect the salience of the means or the outcomes of a goal - Concept Poster. Poster presented at the LIFE Max Planck Research School Academy, Berlin, Germany.

Mustafić, M., & Freund, A. M. (2008, July). Wanting more is not always better: Associations of goal-orientation with age, outcome vs. process focus, and subjective indicators of well-being. Poster presented at the 29th International Congress of Psychology, Berlin, Germany.

Schwarz, S., Mustafić, M., & Hassebrauck, M. (2008, July). Digit ratio (2D:4D) and short-term mating orientation. Paper presented at the 29th International Congress of Psychology, Berlin.

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Zurich, January 2012